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Mother and Infant Activity and Interaction in France
and in the United States: A Comparative Study

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Infants' experiences are often thought to influence social and intellectual
development in the individual, and on a societal level they are sometimes
credited for some of the distinctiveness that typifies cultural style. To
compare and contrast the experiences of French and U.S. American in-
fants, mother–infant dyads in Paris and in New York City were observed
interacting in the natural setting of their homes. This report focuses on
infants' visual attention, tactual exploration, and vocalisation and on
mothers' mediated and unmediated stimulation and speech to infants. The
study had two main goals: One was to identify and describe activities and
interaction patterns that may be similar and different in these two Western

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cultures, and the other was to test the cross-cultural validity of a hypothesis that states that specific mother and infant activities relate to one another in dyadic interaction. Mothers and infants in the two cultures showed some similarities and some different emphases in their activities, and patterns of mother–infant interaction in the two cultures tended to correspond.

INTRODUCTION

This study attempts to document and compare activities and interactions among French and U.S. American infants and mothers. Although social scientists and lay observers have often commented on prominent resemblances as well as marked divergences in general psychological profiles of French and Americans (e.g. Brinton, 1968; Clarke, 1985; Hill & König, 1970; Howorth & Ross, 1987; McKay, 1983; Zeldin, 1983), direct scientific, and more specifically developmental, comparisons between these two peoples are rare. Contemporary France and America are relatively similar in terms of industrial level, living standards, educational attainment, and climatic conditions, yet the two societies also differ considerably in terms of history, sociology, and culture (see, e.g. Bertrand, 1986; Darnton, 1984; Dolto, 1955; Gramont, 1969; Hoffman, 1963; Maranda, 1974; Métraux & Mead, 1954; Wolfenstein, 1955).

The home environment has often been thought to mirror these larger cultural values, beliefs, and customs (e.g. Barnouw, 1963; Benedict, 1938; Mead, 1935; Murray, 1938; Spindler, 1974). Many social theorists from widely varying traditions in psychology, sociology, and anthropology have contended that the family generally, and the mother–infant relationship specifically, may play vital parts in the development of the individual and in the organisation of the culture (Ainsworth, 1967; Bateson & Mead, 1942; Benedict, 1974; Brody, 1956; Bruner, 1989; Doi, 1973; Kardiner, 1939; Kessen, 1983; Miller & Dollard, 1941; Minturn & Lambert, 1964; Murray, 1938; Naroll, 1970; Super, 1976; Wallace, 1961; Whiting, 1963, 1981; Whiting & Child, 1953). Of course, each society evolves patterns of child-rearing practices adjusted to its own special demands (for discussions of the “Goodness of Fit” model of social interaction as applied to development in the context of culture, see deVries & Sameroff, 1984; Lerner, 1989; Lerner & Lerner, 1983; Super & Harkness, 1981). As a result, investigators have frequently turned to comparative studies of early childhood and mother–infant interaction in attempts to address questions about the origins and development of cultural identity and style.

In order to study cultural variation in childrearing practices, cross-cultural researchers often select unique or exotic cultural systems (e.g. East Paraguayan Ache), or they choose to compare samples from very different cultural settings (e.g. Caucasian American, African Kenyan, Oriental Japanese). Culture has many facets, however, including mod-
ernity, urbanity, economics, education, and so forth (see Jahoda, 1980). In order to evaluate potential effects of contrasting childrearing styles, as separate from a confound with differences in such factors, cross-cultural research should also include assessments of psychological phenomena in cultures more similar than not in these terms. The Western-Western contrast of childrearing in France and the United States sets up such a comparison. The specific goals of the present study were then to identify and describe similarities and differences, first, in the occurrence of salient everyday activities of mothers and infants and, second, to evaluate the nature of basic mother–infant interactions in France and the United States. The fact that French and Americans did not follow identical patterns of activity and interaction, as we shall see, supports the value of such contrasts.

To set the background for this report, we briefly review the status of developmental study in Francophone psychology and of cross-cultural comparisons between France and America. Further, we review the specific activities and interactions we observed.

**Developmental and Cross-Cultural Study in Francophone Societies**

Cross-cultural developmental comparisons of the type pursued in this study are acknowledged to be valuable for many reasons (see Bornstein, 1980, 1989a; Brislin, 1983; Super, 1981), one important one being the basic descriptive data they provide about child life in diverse settings. Many experimentalists and theoreticians have argued that direct observations of childrearing practices are requisite to understanding development in different cultural settings (e.g. Whiting, 1981).

Despite the fact that notable French and Francophone philosophers and social scientists have for centuries speculated about the central role of childrearing in individual development and societal evolution (e.g. Com- payré, Condillac, Descoeudres, Héroard, Itard, Piaget, Quetelet, Rousseau, Taine, Wallon), circumstances surrounding the growth of young children in Francophone societies (e.g. France, Belgium, Switzerland) was, until recently, infrequently studied. Piaget (e.g. 1936) and Wallon (e.g. 1942, 1947) are commonly acknowledged to have set the theoretical agendum for contemporary research in developmental psychology in these countries (see Mounoud & Hauert, 1982). Although both Piaget and Wallon emphasised "the importance and richness of the relations between infant and caregivers" (Mounoud & Hauert, 1982, p. 103), both focused more narrowly on the antecedents of representational thought in the sensation, posture, and motor function of the young child. Importantly, the majority of their successors (e.g. Ajuriaguerra, Harrisson, & Lézine,
1967; Bresson & de Schonen, 1976–1977; Bullinger, 1977; Flament, 1982; Patois, Roy, Sempe, & Lellouch, 1974; Sinclair, Stambak, & Lézine, 1982; Widmer, 1980) have likewise concentrated on sensory, perceptual, and motor development as "expression[s] of the child's preexisting knowledge or as the starting points for the acquisition of new knowledge" (Mounoud & Hauert, 1982, p. 101).

Moreover, modern French developmental study is almost exclusively supported by public funds earmarked for applied projects, and as a consequence research has been largely oriented towards issues such as public health in daycare centres (e.g. Lézine, 1974; Richardson & Marx, 1989). Mother–infant interaction has generally been studied from the perspective of risk prevention and social need (Bloch, 1983; Fivaz & Cornut-Zimmer, 1983; Lebovici, Mazet, & Visier, 1989). Nonetheless, Francophone developmental research specifically concerned with mother–infant interaction is beginning to emerge (Casati, 1987; Lécuyer, 1989; Lécuyer & Pêcheux, 1983; Pêcheux & Lécuyer, 1983; Pinol-Douriez, 1984; Sabatier, 1986; Vyt, 1989). Notably, mother–infant interaction, speech, and bodily contact in feeding (Josse & Robin, 1986; Robin, 1980, 1982; Robin & Josse, 1984) and antecedents of language development in early life (Clarke, 1985; Cosnier, 1984; Marcos, 1987) have come under close scrutiny. In overview, however, documentation of everyday activities and interactions of infants and mothers in natural settings is under-researched in French developmental psychology, and there are as well few if any direct comparisons of French and American childrearing practices.

Mother–Infant Activity

Maternal activities toward infants in the first year of life encompass many dimensions, including notably basic nurturing, social exchange, and didactic stimulation (see Bornstein, 1989b). Across settings not distinctively different in terms of modernity, urbanity, economics, education, ecology, or climate, some aspects of infant caretaking might be less, and others more, "free to vary" from a cultural point of view. For example, activities of mothers, such as expressing emotion or selecting styles for teaching infants, might be expected to reflect contrasting goals mothers of different cultures hope to achieve more readily than less "discretionary" activities involved in basic caretaking, such as meeting infants' needs for sustenance.

To assess this possibility, the present study focused on two prominent domains of mother and infant activity hypothesised to fall into a discretionary category, viz. focus of behavioural interaction and mode of speech. In the domain of behavioural interaction, a social orientation describes interactions that, for mother, encompass physical and verbal strategies used to engage and stimulate the infant to focus on the mother and, for the
infant, have a corresponding focus of attention on mother. A didactic orientation of activity describes interactions that turn outward from the dyad; they consist, for the mother, in physical and verbal strategies used in stimulating the infant to engage the environment and, for the infant, they imply a corresponding focus of attention on the environment. The second domain concerns modes of maternal speech. Mothers nearly universally modulate vocal pitch in interaction with their infants, and it has frequently been suggested that the prosodic contours of such infant register or “motherese”, contra adult conversational tones, might play an important role in infant mental and social development (e.g. Papoušek, Papoušek, & Bornstein, 1985). Of course, activities of mothers are intricate and meshed, so different modes of engagement do not occur in isolation from one another or other maternal activities. Yet, it is possible, and has been shown to be heuristically valuable, to distinguish among them (e.g. Belsky, Gilstrap, & Rovine, 1984; Bornstein, 1985, 1989b; Bornstein & Tamis-LeMonda, 1990; Brown, 1977; Goldfield, 1987; Penman, Cross, Milgrom-Friedman, & Meares, 1983; Snow & Ferguson, 1977; Stern, 1985; Vibbert & Bornstein, 1989; Wachs & Gruen, 1982). Further, these activities have proved to be independent of one another in mothers, and they show independent directions of developmental change across the age period studied here (e.g. Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990).

For the infant, attention and vocalisation serve as principal gauges of state of arousal and affect, as well as of perceptual and cognitive functioning in early life (see Bornstein, 1989c; Lamb & Bornstein, 1987). Binet, for example, considered general intelligence to involve “higher” mental processes, among which he specifically included attention. Infants, too, vocalise nondistress and distress in communicatively meaningful ways, and they show large individual variation and clear developmental changes in doing so (e.g. Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990). Finally, there is reason to believe that patterns of attention and vocalisation may vary in infants of different cultural heritage, because of genetic and social influences (Bornstein, 1989a; Bornstein, Gaughran, & Homel, 1986; Campos et al., 1983; DeVries & Sameroff, 1984; Konner, 1981; Lerner, 1989; Plomin, 1986). For these reasons, we also assessed and compared patterns of attention and types of vocalisation in French and American infants.

The Present Study

The present study was designed to provide descriptive information about normal mother and infant functioning in two Western cultures. In its orientation, this study follows in the tradition of cross-cultural comparisons
of home-based observations of everyday family life (e.g. Bornstein, Azuma, Tamis-LeMonda, & Ogino, 1990; Caudill & Weinstein, 1969; Kaplan & Dove, 1987; Konner, 1977; Lewis & Ban, 1977; Sigman et al., 1988; Tulkin, 1977). In Paris and in New York City, we observed dyads of 5-month-old infants and their mothers interacting as they naturally do at home during times when babies were rested and attending alertly. Our study focused on middle infancy because of the intentionality and flexibility in behavioural organisation which infants demonstrate at this time (Emde, Gaensbauer, & Harmon, 1976; Wolff, 1984). By this age, the baby’s scope of apperception has considerably broadened beyond the dyad; infants look to the environment, reach out and grasp, and actively participate in turn-taking exchanges (Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990; Cohn & Tronick, 1987; Kaye & Fogel, 1980).

An additional goal of the study was hypothesis testing of specificity in discretionary activities of mothers and infants. We concentrated on analysing correspondences between activity states of partners in the dyad. In order to evaluate correspondences, consistency in the concurrent rank-order status of conceptually related mother and infant activities was assessed. In the specificity model of mother–infant interaction (Bornstein, 1989b; Hunt, 1979; Wachs & Gruen, 1982), mothers who perform one kind of activity relatively more often or appropriately are expected to have infants who perform a conceptually related activity relatively more frequently or possess a relatively higher ability of a particular kind. Recent data suggest that specific parental activities relate to specific aspects of infant activity or competence in this way (e.g. Bornstein & Tamis-LeMonda, 1990; Goldfield, 1987; Hoff-Ginsberg & Shatz, 1982; Vibbert & Bornstein, 1989; Wachs & Chan, 1986), and therefore that certain parenting activities may occupy an especially meaningful psychological place even in the repertoires of children who are still in the first year of life. Comparing American with French families enabled us to evaluate the cultural generalisability of correspondences previously found in Japanese and in a different American sample (see Bornstein et al., 1990).

METHOD

Sample

Forty-eight primiparous mothers and their 5-month-old infants, recruited from patient populations of private obstetric and paediatric groups in Paris and in New York City, were observed interacting at home; 24 dyads in Paris were native French, and the 24 in New York were Americans. All infants were term at birth and healthy up to and at the time of the study; mothers were the infants primary caregivers. The two samples were
balanced for sex of baby. Dyads came from comparable middle to upper middle class households (the Hollingshead, 1975; Four Factor Index was 57 for French and 58 for Americans; see also Gottfried, 1985). Babies in the French and in the American samples were approximately the same age at the time of the home visits, $M_s = 162$ and 165 days, and their mothers were approximately the same age, $M_s = 31$ and 30 years, and had statistically comparable educational histories.

**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 as far as possible. Observations were scheduled at times of the day when infants were awake and alert (see Bornstein, 1985; Bornstein et al., 1990; Bornstein & Tamis-LeMonda, 1990; Tamis-LeMonda & Bornstein, 1989). Our goal was to observe mothers and infants under the most natural and unobtrusive conditions possible, and not to standardise the context of data collection beyond what naturally occurred in the home. After a period of acclimation, mothers and infants were videotaped in continuous interaction for 45 minutes. A single female observer, always a native of the country, visited the home to videotape.

**Data Reduction**

The data reported here were excerpted from a larger ongoing longitudinal study. Six infant activities of attention, exploration, and vocalisation, six maternal activities including stimulation and speech, and one joint activity were coded from the videotapes. Two of the six infant activities contrasted orientation of visual attention to a property, object, or event in the environment or to mother. The third coded infant active hand contact with an object, and a fourth coded looking at the observer. The final two codes evaluated infant vocalisation as either nondistress or distress.

Two maternal codes contrasted mother’s mediated (active) stimulation and organisation of her infant’s attention didactically (that is to some property, object, or event in the environment) versus socially (that is to the mother herself). Mothers could do these by physical or verbal means, and by introducing a new topic or elaborating on a topic already introduced. Thus, a mother might touch, gesture towards, or position her infant with the explicit purpose of engaging the baby to herself, or she might demonstrate, point, name, or describe in order to facilitate her infant’s visual and/or tactual exploration of some aspect of the environment. Two codes contrasted mothers’ unmediated (passive) stimulation of infants, by
mothers leaving infants opportunity to explore properties, objects, or events in the environment visually or visually-and-tactually. The two final maternal codes assessed speech to the infant, either as infant register (characterised by extreme or fluctuating pitch commonly associated with “motherese”) or as taking conventional adult conversational tones. The last code recorded mother–infant mutual regard.

Table 1 provides summary definitions of these activities. The codes, as well as the experimental techniques employed in collecting the data, were extensively pretested and found to transfer readily between these two cultural settings. Coding was based on intervals of 60sec in which a 30sec observation period was followed by a 30sec recording period (Seitz, 1988). The bounds of each period were signalled to the coder by an automatic timer. At the beginning of each observation period, the coder also noted the infant’s state (modified from Brazelton, 1973). French and American infants were judged to be in states of quiet or active alert in the majority of intervals (93% and 94% respectively).

Two trained coders who were fluent in both English and French scored the videotapes. These coders were uninformed about specific issues and hypotheses concerning cultural and developmental similarities between French and Americans. A highly experienced third coder independently scored 20% of the sessions. On the 13 behavioural categories, these coders achieved an average agreement of \( r = 0.87 \) (range = 0.77–0.98), mean percent = 87% (range = 81%–98%). Coders achieved 96% agreement on infant state.

Frequencies were obtained for all behaviours, consisting of the number of intervals in which each maternal and infant activity occurred. The behaviour codes were not mutually dependent; that is, any code could occur in any coding interval. Before any statistical appraisal, univariate data were inspected in box plots, and bivariate relations were examined in scatter plots (Tukey, 1977). Two outliers emerged, and they were selectively omitted from relevant analyses: one French infant on touch and one American dyad on the relation between unmediated visual opportunity and infant looking at object. Inspection of bivariate distributions showed that no pairs of mother–infant activities were associated in any systematic nonlinear fashion.

Neither infant status (birthweight or length at birth) nor maternal status (age or educational level) systematically related to any of the infant or maternal activities; moreover, the same general relations held for both boys and girls. Therefore, statistical analyses collapsed across these factors. Estimates of mother and infant activities are robust (Wachs, 1987), because observer reliability for the behavioural codes was high, and each of the variables was well distributed (standard deviations are provided in Table 2). The significance of differences between correlation coefficients in


<table>
<thead>
<tr>
<th><strong>TABLE 1</strong></th>
<th><strong>Infant and Mother Activities: Operational Definitions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Infant</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Attention</strong></td>
<td></td>
</tr>
<tr>
<td>Didactic</td>
<td>Visual attention to a property, object, or event in the</td>
</tr>
<tr>
<td>Social</td>
<td>Visual attention to mother</td>
</tr>
<tr>
<td>Tactual exploration</td>
<td>Touching an object</td>
</tr>
<tr>
<td>Observer</td>
<td>Visual attention to the observer</td>
</tr>
<tr>
<td><strong>Vocalisation</strong></td>
<td></td>
</tr>
<tr>
<td>Nondistress</td>
<td>All vocalisations except those connoting clear negative</td>
</tr>
<tr>
<td>Distress</td>
<td>affect</td>
</tr>
<tr>
<td></td>
<td>Vocalisations clearly associated with negative affect</td>
</tr>
<tr>
<td><strong>B. Mother</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mediated Stimulation</strong></td>
<td></td>
</tr>
<tr>
<td>Didactic</td>
<td>Verbal and nonverbal encouragement to attend to a property,</td>
</tr>
<tr>
<td>Social</td>
<td>object, or event in the environment</td>
</tr>
<tr>
<td></td>
<td>Verbal and nonverbal encouragement to attend to mother</td>
</tr>
<tr>
<td><strong>Unmediated Stimulation</strong></td>
<td></td>
</tr>
<tr>
<td>Visual</td>
<td>Providing opportunity to explore visually</td>
</tr>
<tr>
<td>Visual/Tactual</td>
<td>Providing opportunity to explore visually and tactually</td>
</tr>
<tr>
<td><strong>Speech</strong></td>
<td></td>
</tr>
<tr>
<td>Infant register</td>
<td>High or fluctuating pitch (commonly associated with</td>
</tr>
<tr>
<td></td>
<td>&quot;motherese&quot;)</td>
</tr>
<tr>
<td>Conversational tones</td>
<td>Conventional tones used in adult–adult speech</td>
</tr>
<tr>
<td><strong>Mutual regard</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mother–infant face-to-face looking</td>
</tr>
</tbody>
</table>

the two cultures was tested using Cohen’s (1977, pp. 110ff.) Effect Size Index, $q$. Effect size is a metric of the detectability of difference in magnitude between independent population $r$s, and provides a frame of reference within which to appraise differences in the degree of correlation.

**RESULTS**

The results of this cross-national study of French and U.S. American mothers and infants are organised around the two issues raised in the Introduction. First, omnibus analyses are conducted separately for mother and infant activities in the two cultures, and they are followed by planned contrasts. Second, analyses of correspondences between mothers and infants activity states in each culture, and comparison of correspondences between the two cultures, are evaluated.
TABLE 2
Infant and Mother Activities in France and the United States: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>French</th>
<th></th>
<th>U.S.</th>
<th></th>
<th>Homogeneity of Variance</th>
<th>Simple Contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (s.d.)</td>
<td>M (s.d.)</td>
<td></td>
<td></td>
<td>(F max)</td>
<td>F</td>
</tr>
<tr>
<td><strong>A. Infant</strong></td>
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<tr>
<td>Attention</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Didactic</td>
<td>21.8 (7.0)</td>
<td>29.6 (7.8)</td>
<td></td>
<td>1.22</td>
<td>13.56&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>18.3 (7.3)</td>
<td>19.0 (7.1)</td>
<td></td>
<td>1.06</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Tactual</td>
<td>18.2 (6.4)</td>
<td>24.8 (8.0)</td>
<td></td>
<td>1.56</td>
<td>9.87&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Observer</td>
<td>22.5 (6.8)</td>
<td>19.2 (5.9)</td>
<td></td>
<td>1.35</td>
<td>3.36</td>
<td></td>
</tr>
<tr>
<td>Vocalisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nondistress</td>
<td>20.2 (8.1)</td>
<td>17.2 (6.3)</td>
<td></td>
<td>1.68</td>
<td>2.12</td>
<td></td>
</tr>
<tr>
<td>Distress</td>
<td>4.8 (4.5)</td>
<td>3.3 (4.0)</td>
<td></td>
<td>1.28</td>
<td>1.41</td>
<td></td>
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<tr>
<td><strong>B. Mother</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediated Stimulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didactic</td>
<td>10.0 (5.2)</td>
<td>16.6 (8.4)</td>
<td></td>
<td>2.60&lt;sup&gt;a&lt;/sup&gt;</td>
<td>10.74&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>3.4 (2.8)</td>
<td>10.0 (5.1)</td>
<td></td>
<td>3.32&lt;sup&gt;b&lt;/sup&gt;</td>
<td>32.00&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
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<tr>
<td>Unmediated Stimulation</td>
<td></td>
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</tr>
<tr>
<td>Visual</td>
<td>17.3 (9.5)</td>
<td>16.0 (9.8)</td>
<td></td>
<td>1.06</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Visual/Tactual</td>
<td>15.1 (9.4)</td>
<td>14.1 (7.8)</td>
<td></td>
<td>1.46</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Speech</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant</td>
<td>6.8 (6.3)</td>
<td>14.0 (9.4)</td>
<td></td>
<td>2.20</td>
<td>9.58&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>register</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversational</td>
<td>27.6 (8.1)</td>
<td>19.5 (10.6)</td>
<td></td>
<td>1.70</td>
<td>8.86&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
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<tr>
<td>tones</td>
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<td><strong>C. Joint</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mutual Regard</td>
<td>11.8 (7.0)</td>
<td>12.6 (7.5)</td>
<td></td>
<td>1.15</td>
<td>0.14</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup><sub>P ≤ 0.05</sub>; <sup>b</sup><sub>P ≤ 0.01</sub>; <sup>c</sup><sub>P ≤ 0.001</sub>.

Descriptive Comparisons

Table 2 presents descriptive statistics for, and simple uncovaried contrasts between, infant and maternal activities in the two cultures. Because data on activities of partners were collected in an interactional context, however, differences in the two groups of infants or mothers could be explained, at least in part, by differences in partner activities. Therefore, infant activities and mother activities in the two cultures were each submitted to a 6 (activity-type) × 2 (culture) multivariate analysis of covariance (MANCOVA). In these analyses, the six activities of mothers were partialled from the six activities of infants, and vice versa, and residual differences between the two cultures were examined. These
MANCOVAs also specified a set of *a priori* orthogonal contrasts in order to compare the pairs of infant and mother activities discussed above. Specifically, for infants' overall attention (i.e. to mother and to object) was contrasted with overall vocalisation (i.e. nondistress and distress); didactic with social attention; and nondistress with distress vocalisation. For mothers, overall stimulation (i.e. didactic and social) was contrasted with overall speech (i.e. infant register and conversational tones); object with mother stimulation; infant register with conversational tones; and unmediated visual and visual/tactual stimulation.

**Infants.** The six infant activities showed a significant main effect in the MANCOVA, $F(5,229) = 53.54$, $P < 0.001$. The contrasts testing this effect indicated that infants of the two nationalities attended in more intervals than they vocalised, $F(1,41) = 20.01$, $P < 0.001$, and that they vocalised nondistress more than distress, $F(1,41) = 19.08$, $P < 0.001$. With all maternal activities covaried, infants looked at objects and at their mothers equivalently; to assess relations between overall activity levels, contrasts in which mothers' activities were not partialed were also conducted and they showed that infants looked at objects more than at their mothers, $F(1,42) = 18.48$, $P < 0.001$.

The culture main effect was not significant, $F(1,45) < 1$, indicating that American and French babies were similar in their overall activity. However, there was a significant culture by activity-type interaction, $F(5,229) = 5.87$, $P < 0.001$, indicating that infant activity across the six categories differed in the two cultures. Contrasts of this interaction showed that American infants visually attended more than French, and French infants tended to vocalise more than American, $F(1,41) = 11.06$, $P < 0.01$. Moreover, American infants also attended more didactically than French infants, whereas infants in the two cultures attended socially in equal amounts, $F(1,41) = 4.80$, $P < 0.05$. In percentage terms, American infants visually attended to the environment in 66% of the intervals in the recording period and they attended to mother in 42% vs. 48% and 41%, respectively, for French infants. American infants also explored objects tactually in more intervals than French infants, 55% vs. 40%, respectively. French and American infants looked at the observer in statistically equal numbers of intervals, 50% and 43%, respectively. There was no cultural difference in the distribution of nondistress vs. distress vocalisations, $F(1,41) < 1$. On average, French and American infants vocalised nondistress in about 42% of coding intervals, whereas they vocalised distress in only about 9%.

**Mothers.** The six maternal activities showed a significant main effect in the MANCOVA, $F(5,229) = 24.36$, $P < 0.001$. Only one of the four
contrasts testing this effect was significant in the covaried case; mothers in
the two cultures talked to their infants more than they stimulated them,
\( F(1,41) = 8.49, P < 0.01 \). To assess relations between overall activity
levels, contrasts in which infants activities were not partialled were also
conducted, and they showed several significant differences. Again,
mothers of the two nationalities talked to their infants in total in more
intervals than they stimulated their infants in total, \( F(1,42) = 118.68, P <
0.001 \). Moreover, both French and American mothers engaged their in-
fants in interactions oriented to the environment more than they did in
interactions oriented to mother, by margins of 28% to 15% and 33% to
13%, respectively, \( F(1,42) = 39.54, P < 0.001 \). Both French and American
mothers spoke to their 5-month-olds in adult conversational tones more
than they did in the infant register, by margins of 61% to 15% and 43% to
31%, respectively, \( F(1,42) = 44.38, P < 0.001 \). Finally, mothers provided
their infants with unmediated opportunities to explore visually in more
intervals than they did with unmediated opportunities to explore visually/
tactually, on average 37% and 32%, respectively, \( F(1,42) = 7.24, P <
0.01 \).

As for infants, there was no main effect for culture, \( F(1,45) = 1.12 \).
However, mothers in the two cultures differed in the distributions of
activities across the six categories, as evidenced by the significant activity
by culture interaction, \( F(5,229) = 7.13, P < 0.001 \). The contrasts testing
this interaction indicated that American mothers stimulated their infants in
total more frequently than French mothers, but that mothers in the two
cultures spoke to their infants in approximately the same number of coding
intervals, \( F(1,41) = 19.17, P < 0.001 \). The more frequent stimulation by
American mothers obtained for both didactic and social engagement of
infants, as reflected in the nonsignificant interaction of culture by stimula-
tion type, \( F(1,41) = 3.57 \) (see Table 2). There was a significant culture by
form of speech interaction, \( F(1,41) = 12.84, P < 0.001 \). French mothers
significantly favoured the use of conversational tones to infant register,
whereas American mothers employed the two forms in essentially equiva-
lent numbers of intervals. The two cultures did not differ in providing
unmediated opportunities for infants to explore, \( F(1,41) < 1 \).

Finally, American and French mother–infant pairs engaged in face-to-
face regard equally often, if infrequently (in approximately 15% of coding
intervals).

**Correspondence in Mother–Infant Interaction**

Table 3 shows relations between maternal stimulation and speech and
infant attention and vocalisation. Two general patterns of results emerged,
one showing cultural similarities and the other showing cultural diver-
gences in the co-ordination of mother–infant activities.
<table>
<thead>
<tr>
<th></th>
<th>Infant Attention</th>
<th></th>
<th>Infant Vocalisation</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Didactic</td>
<td>Social</td>
<td>Tactual</td>
<td>Observer</td>
</tr>
<tr>
<td></td>
<td>Fr</td>
<td>U.S.</td>
<td>Fr</td>
<td>U.S.</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediated Stimulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didactic</td>
<td>0.38&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.79&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.01</td>
<td>0.10</td>
</tr>
<tr>
<td>Social</td>
<td>0.07</td>
<td>0.00</td>
<td>0.20</td>
<td>0.49&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Unmediated Stimulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual</td>
<td>0.77&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.41&lt;sup&gt;a&lt;/sup&gt;</td>
<td>−0.28</td>
<td>−0.33</td>
</tr>
<tr>
<td>Visual/Tactual</td>
<td>0.71&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.35&lt;sup&gt;a&lt;/sup&gt;</td>
<td>−0.23</td>
<td>−0.37&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Speech</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant register</td>
<td>0.04</td>
<td>0.15</td>
<td>−0.10</td>
<td>0.28</td>
</tr>
<tr>
<td>Conversational tones</td>
<td>−0.12</td>
<td>LES0.36&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.29</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Cohen’s (1977) Effect Size Index: MES = Medium Effect Size; LES = Large Effect Size

<sup>a</sup><i>P</i> < 0.05; <sup>b</sup><i>P</i> < 0.01; <sup>c</sup><i>P</i> < 0.001.
In both cultural settings, a pattern of corresponding relations between mothers and infants emerged, indicating a degree of behavioural specificity in interactions between partners. In particular, the frequency and locus of maternal mediated and unmediated stimulation tended to match the frequency and locus of infant attention. (No other pairwise mother–infant relations showed such regularity.) Among both French and American dyads, mothers who engaged in didactic stimulation more had infants who attended didactically and explored tactually (rather than attended socially) more, and mothers who engaged in social stimulation more had infants who tended to engage more in social attention. These effects were somewhat, although not significantly, stronger in American dyads. Neither mode of maternal stimulation was associated with infant attentiveness to the observer, even though infants looked at the observer in both samples. In both societies, mothers providing unmediated opportunities for their infants to attend visually and to explore visually/tactually also showed strong, positive associations with infants visual attention to the environment and tactual exploration. Again, these relations were specific in the sense that mothers providing opportunities for their infants to explore the inanimate environment was unrelated to their infants attention to social stimuli (i.e. mother herself or the observer).

Maternal speech in conversational tones related to infant attention irregularly: Among Americans, but not French, mothers’ use of conversational tones was associated with infant attention to the environment, $q = 0.50, P < 0.05$. Maternal speech in the infant register did not relate to locus of infant attention in either group. However, maternal speech in the infant register was negatively related to infant nondistress vocalisation in the French, but unrelated in the Americans, $ns$, and it was unrelated to infant distress vocalisation among the French, but positively related among Americans, $q = 0.57, P < 0.05$.

These concurrent correlations between mothers’ and infants’ activities do not imply causation. They indicate, rather, degree of correspondence in the activity states of the two partners in the dyad during a typical period of interaction. This covariation of activity points to mutual attunement in individual dyads, and to potentially general developmental processes.

**DISCUSSION**

This exploratory study compared and contrasted prominent infant and mother activities as well as dyadic forms of interaction in France and the United States. Critics continue to decry implicit generalisation from monocultural psychological investigation (e.g. Kennedy, Scheirer, & Rogers, 1984; Moghaddam, 1987; Triandis, 1980). Moreover, Francophone
developmental study has not concerned itself with close examination of everyday parent–child relations (Vonèche, 1987). In contrast with prevailing ethnocentric and idiographic traditions, the present study reports nomothetic, group-based, between-culture comparisons.

It is important to note at the outset that the families participating in this study were relatively restricted in terms of sociodemographic level, urban location, and educational history, and so different patterns of results could emerge in mothers (and conceivably in infants) coming from other regions of the SES scale, from less metropolitan environments, or less educated families. Further, the results of these observations must be considered in the context of the open style of interaction studied and with respect to the particular activities and coding strategies adopted. In short, the generalisability of the findings might be circumscribed.

Nonetheless, mothers and infants in the two countries studied both commonly engaged in the activities we defined, and they showed substantial individual variation. The data demonstrate both similarities and systematic differences in activity in members of these two cultural groups. On similarities specifically, mothers in the two cultures acted toward their infants in equivalent numbers of intervals in the observation period, and talked in more than they stimulated, stimulated infant attention to the environment in more than to themselves, left their infants equivalent opportunities to explore visually and visually/tactually, and spoke in conversational tones more than in infant register. Infants in the two cultures also acted in equivalent numbers of intervals, and looked more than they vocalised, looked at the environment more than at their mothers, and vocalised nondistress more than distress.

Significantly, the two cultures showed equivalent patterns of correspondence between mother and infant activities. This comparison partially replicates and extends prior research in the United States that demonstrates selected correspondences of activity patterns in babies and their mothers and therefore points to modest cross-cultural generalisability of some central developmental processes. The foci of engagement in mothers and of attention in infants relate to one another systematically, as predicted by a specificity model of interaction (e.g. Bornstein, 1989b; Hunt, 1979; Wachs & Gruen, 1982). Interactive patterns found to function analogously in different cultures may point toward mechanisms in early development that are not necessarily culturally determined. For example, something universal about the status of the infant or having a new baby may regularly invoke these particular patterns of parental interaction (Super & Harkness, 1986).

Even in the context of such consistent similarity, mothers in these two cultures stressed different forms of stimulation and speech to their infants. American mothers actively stimulated their infants to engage the environ-
ment and themselves more than French mothers did; compared to each other, American mothers spoke to their infants relatively more often in infant register, and French mothers spoke to their infants relatively more often in adult conversational tones. For their part, American infants favoured environmental versus social loci of attending where French infants split their attention equally, and American infants visually attended and tactually explored the environment more than French infants.

Several different sources of variation could account for these differences. First, it is noteworthy that differences in the two cultures obtained when partner activities were partialled, so that systematic variation in partner activities in the two could not be responsible for group differences.

Differences in maternal activity levels might also have arisen because mothers in the two cultures naturally spent different amounts of the observation period with their infants, or because infants were systematically in different states of arousal. To test the first possibility, we measured the videotapes for the total duration of time mothers spent with their babies. Mothers in the two cultures spent equivalent amounts of time with their babies. The times mothers and babies were observed also provided for an optimal assessment of dyadic interaction in terms of babies’ state; to the second possibility (as reported above), babies in both samples were in quiet or active alert virtually all of the visit. Differences in maternal activity could also be attributable to differing views on privacy or embarrassment when being filmed. New Yorkers and Parisians alike are both normally reticent about inviting strangers into the home. However, mothers in both settings volunteered participation, and both expressed interest in the study and cordiality towards the observers.

Thus, the differences in behaviour between mothers and infants in the two cultures cannot readily be ascribed to differences in partner activities, or to differences in mother–infant proximity, mother availability or willingness to participate, or to infant state. Infants were also all firstborn. Nor can the differences readily be ascribed to larger socioeconomic and educational, or ecological and structural factors. Mothers in these two cultures were selected to be similar in terms of socioeconomic status and educational achievement. Of course, SES (as measured by the Hollingshead index) may not indicate exactly similar standings in the United States and France, and even though the French and American educational systems are comparable, what curricula individual mothers followed in school and more particularly what they learned obviously also vary considerably. Ours then is only a rough equation. Finally, ecological factors external to childrearing style per se could play a part in conditioning activities of mothers with their infants, and some specific ones—prominently urban-rural differences or varying physical layouts of homes in different cultures—have been hypothesised to influence mother–infant activity (e.g. Chen & Miyake, 1984). However, these families were from
major metropolitan areas and lived in comparable apartments in multi-
storey buildings.

Taken together, these results demonstrate differences in maternal stimu-
lation and speech in French vs. American mothers. The results call to mind
Piaget's so-called "American Question". Piaget represented infants as self-
motivated, active learners, and de-emphasised the role of specific learning
experiences in influencing development. Many researchers and theoretici-
ans (particularly from the United States) have proposed that infant
competence may be promoted by instruction and by the provision of an
enriched environment. Piaget characterised the question "What should we
do to foster cognitive development?" as particularly American. For Piaget,
it seems, something about American customs, rather than something about
infant development, motivated the question.

The comparative data reported here on maternal stimulation support
Piaget's intuition. It was the American mothers who adopted a more
didactic style of interaction with their infants. Noteworthy in this connec-
tion is the fact that French parents consider that their principal role
towards infants is to bring them security and support, and not to stimulate
(Dion & Pêcheux, 1989). In follow-up studies, we plan to interview
mothers further about their goals for their infants and their beliefs about
their own role in helping their infants reach those goals, as well as about
their understanding of development and the meaningfulness of stimulation
in development.

Snow and Ferguson (1977) and Clark (1985) have pointed out that adult
speakers of Romance languages, such as speakers of English, regularly
address their infants and young children in "motherese". We found that
English-speaking American mothers use prosodic forms of babyltalk more
than French mothers. It may be the case that the recommendations of
Dolto (1979), a very popular French psychoanalyst, that infants should be
talked to about ongoing events as adults, have influenced French mothers.

Cross-cultural developmental research has many goals. One is descrip-
tive: For example, to inventory and compare similarities and differences in
growth and in experience across different cultures. A second is hypothesis
testing: For example, to assess the broad applicability of psychosocial
principles and processes underlying development. The present study
addressed both of these aims. Given both the similarities and, especially,
the provocative differences found between the mothers and infants in these
two Western societies, however, it seems promising to trace the differential
developmental course and predictive validity of mother and infant activities
that appear to have already emerged early in the first year of life. We are
presently doing so in the realms of child cognitive and communicative
competencies, and social and emotional adjustment.

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