Play With Me at My Speed: Describing Differences in the Tempo of Parent-Infant Interactions in the Lausanne Triadic Play Paradigm in Two Cultures

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The goal of the present study was to examine the tempo of triadic play in Swedish and American families through a comparison of 20 families from each culture. When infants were approximately 3 months old, families in both cultures participated in the Lausanne Triadic Play (LTP), a paradigm that facilitates the examination of the triad as a whole and an organization of its parts. All family play sessions were coded separately in Sweden and America using coding systems that had been developed in each country. Dynamics within the triadic play were compared across cultures, and also across coding systems. Results indicated that both coding systems described a distinct difference in the tempo of play between American and Swedish Families. Overall, although there were many similarities between countries, American families were found to have a faster pace in triadic play than Swedish families. This difference in tempo is explored in the data analyses and the discussion of this article.

Keywords: Cross-Cultural; Sweden; Mother; Father; Infant; Family Triad; Tempo; Mother-Infant; Father-Infant; Synchrony

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Early social development has been examined most prevalently in the mother-baby dyad, and more recently the father-baby dyad (Lamb, 1997; Marsiglio, Amato, Day, & Lamb, 2000; Parke, 1979; Parke & Brott, 1999). This study is one of a handful that focuses on the mother-father-infant triad (Dickie, 1987; Fivaz-Depeursinge & Corboz-Warnery, 1999; Fivaz-Depeursinge, Favez, Lavanchy, de Noni, & Frascarolo, in press; McHale, 1995; McHale & Rasmussen, 1998; Shapiro, 2005) and is unique in that it includes a cross-cultural comparison. The goal of the current study was to examine the tempo of triadic play in Swedish and American families.

Timing has been considered of great importance in child development by a number of researchers and theorists. Schaffer (1977) described the infant's adaptations to temporal patterns as one of the first steps in socialization. Stern, Beebe, Jaffe, and Bennett (1977) and Fogel (1977) indicated that the temporal organization of parent-infant interaction is a critical part of the stimuli that infants are exposed to. Ashton (1976) suggested that the temporal aspect of social interactions is a primary setting for the development of exogenous rhythmic patterns. Feldman and colleagues found that mother-infant synchrony predicts later cognition (Feldman & Greenbaum, 1997) and the emergence of self-control (Feldman, Greenbaum, & Yirmiya, 1999). The importance of temporal patterning in triadic interaction may be of particular importance because the synchrony of three partners is likely to be more complex than with two partners.

Trevarthen (2001) postulated that temporal organization is bidirectional, such that the temporal organization of the baby enables well-timed interaction, and synchrony within interactions fosters the infant's temporal organization. Feldman and her colleagues (Feldman, Greenbaum, Yirmiya, & Mayes, 1996) found that infant temporal organization and social attention by 3 months predicted the later synchrony of mother-infant interactions, highlighting the infant's role. An examination of temporal patterns by Feldstein (1968) revealed that waiting for the other speaker to respond was vital for finding a common tempo. The role of the pauses may be especially important in family interactions because they give space to the baby and enable the infant to respond.

Experimental research examining differences in the pace of play in mother- and father-infant dyads indicated that infants preferred play at either a natural or speeded up pace (Arco, 1983; Arco & McCluskey, 1981). When the parent slowed the pace of play, infants showed less positive affect. Parents, however, showed less responsiveness and expressiveness when not playing at a normal pace. Differences in infant responsiveness may have been due to either the change in the pace or parental behavior.

Comparing Swedish and American Families

Examining family interactions across cultures has been increasingly recognized as important for exploring theoretical boundaries (Parke, 2002). Cross-cultural research can have important clinical implications, particularly because some theorists have argued that culture organizes behavior in fundamentally unique ways (Rogoff, 1990). Sweden is well known for its family-friendly social policy, making comparisons between Sweden and America particularly interesting.

Lamb and his colleagues (Lamb, Frodi, Frodi, & Hwang, 1982; Lamb, Frodi, Hwang, Frodi, & Sternberg, 1982) found that in both traditional (mother as primary care-

taker) and nontraditional (father as primary caretaker for 1 month or more) families, Swedish fathers differed from traditional American fathers in that they were not more likely to engage in physically stimulating play with their babies than mothers. This is a dramatic departure from the literature on the unique role of fathers in play with infants (see Parke, 1999). A comparison of this research with previous research by Lamb (1977) revealed that Swedish parents held and played with their babies less than American parents did (Lamb, Frodi, Hwang, & Frodi, 1983). Hwang (1986) found that when both parents were present in Swedish families, mothers were more likely to show affection toward their infants and bid for their attention than fathers. When alone with their infants, fathers in traditional families were more likely to play with their infants than nontraditional fathers.

Based on these findings that American parents overall, and fathers in particular, tend to play with their infants more than Swedish parents, we hypothesized that there are also likely to be cultural differences in the dynamics within parent-baby play. Because the frequency of activities, such as holding or playing with one's infant, is one place in which cultural differences were found (Lamb, 1977, 1983), frequency and timing within play were chosen as measures to investigate cultural differences in the present investigation. Based on Lamb's findings that American parents engaged in more play activities than Swedish families, we hypothesized that American families would exhibit a faster tempo of play than Swedish families.

METHODS

Participants

Longitudinal studies including a focus on the family triad were simultaneously conducted in Stockholm, Sweden, and Seattle, Washington. A total of 20 families were randomly selected from the larger Washington sample to be compared with 20 Swedish families in the present investigation.

Swedish Participants. In the Swedish study, 20 families were recruited through midwives at a Maternity Health Care Clinic, chosen because of the diverse population it serves. All but 2 families invited to participate in the study consented to do so. The only inclusion criteria were that couples had to be living together, were expecting their first baby, and spoke Swedish. No psychiatric or substance abuse problems were found that would necessitate additional exclusions (on the Swedish SCL-90).

Following are demographic characteristics for these expectant couples: mean expectant father age = 30 (24 to 42), average expectant mother age = 27 (21 to 32); 47% of these men and 53% of these women obtained a university level education; 23% of the men and 40% of the women completed high school, and the remaining 30% of men and 7% of women completed lower or compulsory school. All the men and 19 of the women were Caucasians, and one mother was originally from Brazil. The mother from Brazil had been in Sweden 7 years and spoke Swedish fluently. All couples lived together, and 40% were married. This tendency to live together as a committed nonmarried couple planning to parent together is normative in Sweden (Statistiska Centralbyrån, 2004). Twelve of the infants were boys, and 8 were girls. The average ENRICH (Wadsby, 1998) relationship satisfaction during pregnancy was 488.3 ($SD = 35.8$) for the men and 495.7 (SD = 39.0) for the women, reflecting the high satisfaction expected during pregnancy (see Shapiro, Gottman, & Carrère, 2000).

Although it is difficult to obtain a truly representative sample from any population, the sample's demographics are reflective of Sweden's national demographics (Statistiska Centralbyrån, 2004). Although one mother was from Brazil, we did not exclude her because even dominantly Caucasian countries such as Sweden have immigrants who become part of their culture.

American Participants. A two-stage sampling procedure was used to recruit a sample of newlywed couples with an even distribution of marital satisfaction from the Seattle area in Washington. Couples were initially recruited using newspaper advertisements and were surveyed over the phone to determine their edibility and assess their marital satisfaction using the telephone version of the Marital Adjustment Test (MAT; Krokoff, 1989). Couples were eligible for the study if they were both childless and had been married for the first time within 9 months of study participation. No participants were identified as having psychiatric or drug abuse problems that would necessitate their exclusion.

Newlywed couples ($N = 130$) enrolled and followed for the next 7 years. The racial and ethnic distribution in this sample matched the City of Seattle's planning Commission Report (1990). Forty-eight of these couples became parents and were invited into our laboratory with their 3-month-old babies. Couples had their first baby 3 years after marriage on average. Fifteen of these families were not considered eligible for the current study because of a combination of technical difficulties and infants being over 4 1/2 months old at their laboratory visit. Twenty of the remaining 28 families were randomly selected for the present study; 13 of these infants were male, and 7 were female.

The racial and ethnic distribution of these 20 families was 75% Caucasian mothers and fathers; 15% African American mothers; 10% African American fathers; 5% Asian American mothers and fathers; 5% Latino American mothers, and 10% Latino American fathers. Twenty percent of couples were in a biracial relationship: 2 Caucasian-African American couples, 1 Caucasian-Latino couple, and 1 Caucasian-multiracial background couple. All individuals had grown up in the United States. At the time of the postbirth assessment, the average husband age was 30.5 years old ($SD = 3.67$), and the mean wife age was 29.75 ($SD = 2.94$). The average wife marital quality, as measured on the Locke-Wallace (1959) Marital Adjustment Test, was 124.87 ($SD = 16.66$), and the mean husband marital quality was 121.67 ($SD = 15.28$).

This was a middle-class sample, with 65% of fathers and 50% of mothers having completed some college, 30% of fathers and 45% of mothers having completed specialized vocational training, and only 5% of mothers having completed only a high school education. These educational demographics are within the range for the Seattle area and are comparable with those of other major U.S. cities (City of Seattle Datasheet, 2000).

Comparability of the Two Samples. Although both the Stockholm and Seattle samples consist of two-parent families with first-born 3-month-old infants and demographics reflective of their culture, there are notable differences between them. One difference that we believe reflects cultural norms is that the average education level was higher for fathers in Seattle than those in Stockholm. The samples were also recruited differently, and couples recruited through midwives may be qualitatively different from those recruited through newspaper advertisements. Finally, both samples have some racial and ethnic diversity, with greater diversity in the American sample.

Procedures

Families in both cultures were invited into one of our laboratories when infants were approximately 3 months old. Visits were scheduled when parents reported their baby was likely to be alert and recently fed. Families filled out questionnaires and participated in the Lausanne Triadic Play (LTP) paradigm, which is a videotaped semistructured situation that facilitates the examination of the triad as a whole and an organization of its parts (Corboz-Warnery, Fivaz-Depeursinge, Bettens, & Favez, 1993). Parents were asked to play with their baby in four phases: (1) one parent played with their baby while the other was simply present, (2) the parents switched roles in the second phase, (3) both parents played with their baby in a ''three-together'' phase, and (4) finally, the parents talked while the baby was simply present. Parents were asked to play naturally for as long as felt natural to them during each phase. Both Swedish and American families were coded in both countries using independently developed coding systems.

Measures

Seattle Questionnaires

Marital Adjustment Test. The Locke and Wallace (1959) Marital Adjustment Test (MAT) was used in Seattle to index marital satisfaction because of its high reliability and validity. Higher scores represent greater marital satisfaction. This questionnaire measure was administered to both spouses both during the newlywed period and approximately 3 months after their first baby was born. Additionally, a telephone version of the MAT with similar psychometric properties was administered to the wives during subject recruitment (Krokoff, 1984).

The Cornell Medical Index. The Cornell Medical Index (CMI) was administered to the parents in the Seattle group both upon recruitment and again when infants were 3 months old to assess psychopathology. The CMI is considered a quick and reliable measure for assessing medical symptoms (Brodman, Erdmann, Wolff, & Broadbent, 1949).

Stockholm Questionnaires

The ENRICH Marital Inventory. The ENRICH Marital Inventory was used to assess relationship satisfaction because a Swedish version has been validated (Wadsby, 1998). This questionnaire was administered during pregnancy and at 9 months postbirth. Possible total scores range from 115 to 575, with higher scores reflecting higher satisfaction.

SCL-90. The Swedish translation of the Derogatis Symptom Checklist (SCL-90) was administered as a general measure of reported psychopathology. The SCL-90 has good reliability and validity (Derogatis, Lipman, & Covi, 1973).

Seattle Coding. The Seattle group coded family play both by indexing the tempo of play and infant affect. This dual coding approach enables the examination of the relationship between tempo of play and infant emotion. Tempo of play was examined at the level of the family while infant facial affect was examined at the level of the individual infant.

Tempo coding. Tempo of play was operationally defined as the number of changes in activity per minute. The number of total activities and duration of play during each phase of the LTP was coded, and an index of tempo computed from these codes. Kagan and his colleagues measured tempo by indexing the number of times an infant

changed his or her manipulative involvement from one toy to another within a specific time frame (Kagan, Lapidus, & Moore, 1978; Messer, Kagan, & McCall, 1970).

Our approach to indexing tempo of play is an attempt to extrapolate the above model used for solitary infant play to parent-infant play in both dyadic and triadic interactions. Instead of noting changes in manipulation of objects, we focused on changes in overall activity, regardless of which of the players may have initiated the change. Changes in activity were noted any time a distinct difference in the theme of the play was evident, and activities were coded using a mutually exclusive and exhaustive system designed for this purpose. Common activities included facial/vocal play, singing, peek-a-boo games, and tactile games.

Following Cronbach's generalizability theory (e.g., Cronbach, Rajaratnam, & Gleser, 1963; see also Bakeman & Gottman, 1986), reliability is defined as the ability of a measure (e.g., a tempo measure) to discriminate among families in a sample; the ideal coefficient of reliability is the correlation coefficient (or the intraclass correlation). Pearson correlation was considered the best method for calculating interrater reliability because occurrences were summed over time rather than time-based coding being used. Correlations, calculated for 30% the data, were $r = .91$ during mother-baby play; $r = .97$ for father-baby play; and $r = .99$ during the three-together play phase.

Affect coding. The affect dimension of the Seattle Triadic Interaction Coding System was used to index the baby's expressions (Shapiro, 1996). Coding was conducted continually, producing one dominant code per second. The percentage of duration for each code was then calculated and used for analysis. Infant affect was coded as being positive, neutral, or negative. This coding system takes into account facial affect, vocalizations, and body posture. Indications of positive affect included smiling, laughter, and cooing. Indications of negative affect included crying, fussing, grunting, brow lowering or creasing, frowning, pouting, and agitated body posture. Infant affect was considered neutral in the absence of positive and negative indicators and was considered negative if there were both positive and negative indicators. Independent observers coded 35% of the videotapes. Again, Pearson correlation was used for calculating reliability because percentage scores were examined. Pearson's correlations ranged from .91 to .94 for mother-baby play; from .92 to .99 for father-baby play; and from .90 to .98 for the three-together phase.

Stockholm Coding. The Stockholm group used codes taken from the larger Child-Parents-Interaction-Coding-System (CPICS), which focuses on examining family interactions on a microanalytic level by taking into account both individual events and sequences of interaction (Hedenbro & Lidén, 2002). It focuses on parent and infant contributions, turns, and turn-takings within family interactions to examine the balance of space given and taken. The Stockholm group focused on coding only the three-together phase of the LTP.

Turns are the core unit of this system, reflecting individual events occurring independently and within sequences of interaction. These microelements are the turns of contributions and responses being exchanged between family members. Turns involve verbal, nonverbal, and physical behaviors that may co-occur and be represented in one turn or occur separately and be reflected in separate turns. For example, one turn would be counted if the father simultaneously smiled at the baby, gestured to him, and said, ''That's my boy.'' Examining these microelements enables an understanding of the dynamics within interactions.

A *contribution* is a turn that has the potential of starting an interaction sequence, regardless of whether it actually leads to a new sequence. These behaviors can be made by any member of the family, either intentionally or nonintentionally, and are operationally identified by being different from the current focus of the interaction. For example, if a child is looking at something with great interest (a nonintentional contribution) and the parent acknowledges his or her interest, then a sequence of events can follow this initial behavior. Contributions not followed by a response do not lead to a new interaction sequence. For example, if the baby looks and smiles at his mother, and the mother shows the baby the strap on the baby seat, the baby's contribution is followed by the mother's contribution rather than a contingent response on the same focus.

Even subtle aspects of parent-infant communication were considered important because they reflect the impact that caretakers have in acknowledging or responding to selective infant signals. Parental contributions are usually intentional actions that start or change something in the interaction. The 11 types of contributions are (1) positive affect, (2) negative affect, (3) neutral affect, (4) seeking eye contact, (5) physical movement and touch, (6) directing attention toward (infant) or introducing an object, (7) attending to the infant or parent, (8) positive, negative, and neutral vocalization, and (11) coughing or hiccupping (infant) and seeking information about the child's focus (parent).

Affirmations are turns that validate the baby's contribution. Affirmations can be verbal acknowledgements (statements or a clear ''oh'') or nonverbal smiles, gestures, or gaze. These affirmations can occur simultaneously from both parents.

Turn-takings were coded for each interaction sequence and consisted of three or more turns (contribution and responses) exchanged around a similar focus and are similar to the ''activities'' coded by the Seattle group. Infant participation in turn-taking has been recognized by Papousek and Papousek (1987) and Trevarthen, Muray, and Hubley (1981) as important for attachment and other aspects of child development.

Turn-takings are initiated by a contribution and end when another contribution changes the focus of the interaction. Turn-takings can consist of as few as three turns or be relatively long, consisting of more than as 15 turns. In a turn-taking with several responses, the baby may make the initial contribution by looking at the strap on the baby seat. The mother then notices the baby's focus and takes the strap in her hand, saying ''what a nice strap'' and waving it in front of the baby's face. The father joins the turn-taking saying, ''yes, look at the colors on the strap,'' and the baby responds by looking at the strap and vocalizing. In a turn-taking which a contribution is followed by a response and then a contribution ending the sequence, the baby may look at the father and smile (turn), the father smiles back (turn), then the mother takes the strap and says, ''Here is a strap'' (contribution). Note that although the contribution signals the end of the turn-taking, the turn-taking ends before the contribution (rather than including the contribution that could be included in a new turn-taking if followed by a response).

Indexing the turns and sequences of turn-takings in the family triad is inherently complex, requiring operational definitions that take into account parent-parent and parent-infant interactions and turns exchanged by parents simultaneously and sequentially. If both parents respond to the baby at the same time (talking or smiling), both responses would be counted as one turn. If the parents talk to each other around the focus of interaction (such as the baby or strap), then both responses would be counted as turns. If the parents ignore the baby and start talking about something outside the interaction, it would not be counted as a turn. An example that includes turns exchanged by each family member may start with father taking the strap and

showing it to the baby (contribution), the mother then may say ''isn't that a nice strap'' (turn), and then the baby responds by reaching for the strap (turn).

Differences in the time each family played were accounted for by examining the number of contributions, other turns, and turn-takings relative to each other. For each individual, his or her percent of contributions leading to a turn-taking out of all his or her contributions (potential turn-takings) was calculated. This reflects each family member's relative success in initiating an interaction. The number of turns was divided by the number of turn-takings, which accounts for the length of each turn-taking (or sequence). Verbal and nonverbal affirmations, which are a specific type of turn, were reported as the number of verbal and nonverbal affirmations out of the number of turn-takings.

All sessions were double coded to ensure comprehensive interrater reliability. Each code was counted when it occurred, and only the total number of occurrences was recorded. Pearson correlation was considered the only appropriate method for calculating reliability because summary scores were assessed. Pearson correlations were as follows: turns $r = 0.83$; turn-takings $r = 0.75$; verbal affirmation $r = 0.92$; and nonverbal affirmations $r = 0.89$.

RESULTS

Seattle Coding System Analyses

The tempo of play, defined as the number of changes in activity per minute, was examined across cultures over the first three phases of the LTP through a series of t tests. American mother-baby interactions had a significantly faster tempo of play than Swedish mother-infant interactions, American $M = 4.23$, Swedish $M = 2.3$, $t(38) = 2.67$, $p = .01$, two tailed. The tempo of father-baby play was not significantly different across groups, $t(38) = 1.78$, *ns*, two tailed. American families again demonstrated a significantly faster tempo during the mother-father-baby phase of play than Swedish families, American $M = 4.43$, Swedish $M = 2.5$, $t(38) = 2.97$, $p = .005$, two tailed.

Stockholm Coding System Analyses

The Stockholm group examined the microelements and sequences of interaction through another series of t tests. Significantly more turn-taking sequences initiated by the baby (percent contributions leading to turn-takings out of the total contributions) were evident in American compared with Swedish families, American $M = 39\%$, Swedish $M = 27\%$, $t(38) = -3.55$, $p = .01$, two tailed. There were no significant differences across cultures in contributions leading to turn-takings for mothers or fathers, $t(38) = .04$, *ns*; $t(38) = -1.1$, *ns*. Babies in both countries made significantly more contributions overall than either their mothers, American $t(19) = 8.0$, $p < .001$, two tailed; Swedish, $t(19) = 4.73$, $p < .001$, two tailed, or their fathers, American $t(19) = 8.47$, $p < .001$, two tailed; Swedish, $t(19) = 4.6$, $p < .001$, two tailed.

An examination of turns, the core microelements within turn-taking sequences, revealed the Swedish babies exhibited more turns within a turn-taking than American babies, American $M = 14.3$, Swedish $M = 18.78$, $t(38) = 2.26$, $p = .03$, two tailed. American fathers, however, exhibited significantly more turns within the larger turn-taking than Swedish fathers, American $M = 7.9$, Swedish $M = 0.8$, $t(38) = 2.98$,

$p = .007$, two tailed. Swedish and American mothers did not differ significantly in the number of turns they exhibited, $t(38) = -.77$, *ns*.

To continue this microanalysis, turns that took the form of affirmations, validating infant contributions, were examined. These analyses revealed that American mothers did significantly more nonverbal affirming during triadic play than Swedish mothers, American $M = 17.1$, Swedish $M = 6.6$, $t(38) = -4.03$, $p = .0004$, two tailed, with no significant difference in mothers verbal affirming, $t(38) = -1.97$, *ns*, two tailed. American fathers also did significantly more nonverbal affirming than Swedish fathers, American $M = 15.8$, Swedish $M = 6.3$, $t(38) = -5.38$, $p < 0.0001$, two tailed, but there was no significant difference in the verbal affirmations used by fathers across cultures, $t(38) = 1.02$, *ns*.

Are American Babies Overstimulated by the Faster Tempo? (Seattle Coding)

If the American babies were overstimulated by a higher tempo of play, we would expect to see less positive or more negative affect in American babies compared with the Swedish babies. A series of *t* tests on the Seattle coding of affect revealed no significant differences between American and Swedish families in the percent of positive or negative infant affect for any of the phases of triadic play: mother-baby phase positive affect, $t(38) = .19$, $p = .85$; mother-baby phase negative affect, $t(38) = 1.3$, *ns*; father-baby phase positive affect, $t(38) = 1.5$, *ns*; father-baby phase negative affect, $t(38) = .65$, *ns*; three-together phase positive affect, $t(38) = .08$, *ns*; three-together phase negative affect, $t(38) = 1.7$, *ns*; all two tailed. Thus, American babies do not appear to be overstimulated by the faster pace of play as reflected in their affect.

DISCUSSION

Our laboratories in Seattle and Stockholm have taken different approaches to studying the tempo of play across our cultures that complement each other, revealing a more complete picture of family dynamics in both cultures than either approach would have done alone. Both groups found both similarities and differences in indexes of tempo across our cultures and have also examined other aspects of triadic play that may relate to the tempo of the triadic dance.

The tempo of play, indexed as the number of changes in activities per minute in the Seattle system, and the percent of contributions leading to turn-taking sequences in the Stockholm system reflect a significantly faster pace of play for American families compared with Swedish families. The babies in both cultures, however, did not differ in their expressed affect. Thus, they do not seem overstimulated by the faster pace of play in the American families or uninterested in the slower pace of play in the Swedish families. These results are consistent with the findings of Arco and McCluskey (1981), who found that infants respond positively to play when parents were asked to play at a natural pace, because the families in our study (in both cultures) were instructed to play naturally.

Results reflecting the microelements of interaction within activities or turn-taking sequences indicate that Swedish babies have more exchanges of turns within each turn-taking sequence and that American parents do significantly more nonverbal affirming of infant contributions during three-together play. This higher rate of nonverbal affirmations may help American families keep ‘‘in step’’ with the faster tempo of play through responsiveness to infant signals.

The American families were doing many things within a play session (more activities or sequences), whereas the Swedish families were spending more time within each activity (more turns). Thus, these two aspects of family dialogue do not appear to go hand in hand. This is analogous to a group of Americans talking about five different topics in a 15-minute period while a group of Swedes spend the same 15 minutes exchanging ideas about one topic. In these results, we see our stereotypes of the cultures reflected, with the American question being, ''Can we do it faster?'' and the Swedish question being, ''Can we go deeper?''

Findings also indicate that American and Swedish families have many similar features reflecting overall temporal synchrony. Specifically, infants displayed the highest number of contributions (relative to their parents) in both cultures, and parents appeared to balance their contributions to give their babies space. Despite differences in tempo, infants in both cultures expressed similar amounts of positive and negative affect. These findings suggest that differences in the tempo do not necessarily reflect temporal or interactive synchrony within the dance of family play. This difference in tempo is similar to the difference between a waltz and a jitterbug, where it is coordination and familiarity with the dance step rather than the pace that is important for the dance as a whole.

Given that infants in both Sweden and America expressed similar levels of enjoyment, it is possible that infants have adapted to a culturally influenced tempo of play by the time they are 3 months old. The current findings also suggest that the babies were actively contributing to the pace of play through their ''contributions.'' These findings are consistent with the research of Feldman and her colleagues (1996), suggesting that it is the development of the infant's regulation abilities that drives temporal interactive synchrony. It is possible that because of either genetic factors or the prenatal environment, the infants in these two different cultures come into life prewired for different pacing and related stimulation in their interactions, and that the parents in both cultures are adapting their pace of interaction in response to their infant's cues. Parents in America and Sweden may have also developed methods of being sensitive and responsive to their infants in ways that coincide well with the tempo that the family has adopted.

The differences in the pace of play between the United States and Sweden may or may not be related to differences in social policy. It makes sense that American parents, who are more often actively working or anticipating going back to work, may feel the need to squeeze as much as possible into their time with their baby. Swedish parents, in contrast, may not feel a need to rush their interactions because of social policy enabling them to take more time away from work as a new parent.

Our finding that the tempo of play is faster in American families compared with Swedish families is consistent with those of Lamb and colleagues (1977, 1983) indicating that American parents engage more frequently with their babies through holding and playing with them. Our finding that American fathers exchanged significantly more turns within the larger turn-takings are also consistent with those of Lamb and colleagues (1987, 1983) and Hwang (1985) in that Swedish fathers appear to be contributing less to family play than American fathers.

Based on the previous research (Hwang, 1986; Lamb, Frodi, Frodi, et al., 1982; Lamb, Frodi, Hwang, et al., 1982), we would expect more positive infant affect and a significantly faster tempo in father-baby play in American compared with Swedish families because Swedish fathers are less involved in play and thus less salient to their

infants. This, however, was not the case. Our finding that Swedish fathers made fewer contributions during three-together play than American fathers may indicate that these fathers are giving their infant and spouse space to make the overall interaction more balanced rather than reflecting a lack of engagement or skill as a playmate. This could be an artifact of the historically earlier entrance of fathers in Sweden into the everyday lives of infants relative to American fathers, because the federal government in Sweden has been encouraging paternal leave for many decades.

This comparison of temporal patterning in Swedish and American families has raised many questions about the dynamics of family play across cultures and addressing others. One of the questions raised by this research with possible clinical implications is, Does early tempo of play predict later behavior, preparing children for faster or slower paced lives? The rate of switching the focus of activity in early play may have important implications for later attention ability, while being in step may be related to later communication ability. Longitudinal research is needed to examine these possibilities.

The extension of experimental research across cultures may help further untangle the variables involved in temporal aspects of play. Specifically, experimental research may help clarify whether infants are adapting to (and/or contributing to) the tempo of their culture and identifying the role of parental responsiveness and expressiveness in this process. Further research examining family process across cultures overall, and temporal elements of family interactions in particular, would enrich our understanding of the influence of culture on family dynamics.

Limitations

The limitations in the comparability of the Seattle and Stockholm samples and the representative ability of each sample with respect to its culture should be taken into account when interpreting and generalizing from the results. The sample examined from each culture was largely middle class and thus does not accurately representation the upper and lower class populations.

Although both the Stockholm and Seattle samples are two-parent families with a first-born 3-month-old infant and have demographic characteristics reflective of their stage of life and the culture from which they were recruited, there are also notable differences between these two samples. Specifically, the American parents, fathers in particular, were more educated than the Swedish parents, and different recruitment methods were used for the two samples. The difference in parent education corresponds to a difference in the overall population demographics of the two countries represented. Thus, it is difficult to disentangle influences due to education from those due to culture. Future research matching on education across these two cultures may provide insight into this dilemma. However, it will be virtually impossible to match Swedish parents completing only compulsory school with parents in the United States because completion of high school is considered the lowest level of required education in America.

In Stockholm, parents were recruited through midwives whereas parents were recruited through newspaper advertisements in Seattle, and it is possible that these may be qualitatively different samples. To examine this possibility, we turned to another data set collected by the Seattle group in which pregnant couples were recruited both through birth preparation teachers (which we thought would yield a sample similar to those recruited through midwives) and through newspaper articles

and advertisements (Shapiro & Gottman, 2005). We examined the groups recruited through these two different techniques and found no significant differences in any of the demographic, relationship, or parent-child interaction data examined. Thus, we believe that it is unlikely that there are appreciable differences between the samples explicitly tied to recruitment techniques.

Additionally, both samples have some racial and ethnic diversity, with greater diversity in the American sample. The Stockholm sample included one mother who was born in Brazil, and the Seattle sample included parents from a number of racial and ethnic backgrounds. This diversity both makes the samples less controlled and more representative of the populations from which they derive, because racial and ethnic diversity is an aspect of most modern Western cultures. We believe that this diversity is more likely to add noise to the data examined, making it more difficult to find significant results than it is to produce erroneous results. We believe that it speaks to the robust nature of the cross-cultural difference found that they were significant despite the diversity within each sample.

Clinical Implications

The clinical implications of this research are twofold. First, our results indicate that the pace of family play is culturally influenced, and it is important for family therapists, health care providers, and social workers to be aware that such culturally influenced diversity is natural and not negative. Second, our results suggest that it is the ability of the family members to be in step during interaction that is important for family functioning rather than the tempo of the interaction.

Therapists, health care providers, and social workers often watch family interactions, either at the dyadic or whole family level, over the course of their evaluations. Differences in the tempo of family play are one aspect of the interactive dynamics that may be salient to the evaluator as a factor that makes some interactions look ''different'' from others, and thus could be interpreted as ''negative.'' The current research indicates that differences in the pace of family play do not appear negative as reflected by a similar level of infant affect without regard to tempo. Thus, recognizing the tempo of play as being culturally influenced may be vital in guarding against cultural discrimination and in promoting optimal service for each family's individual needs. This need to guard against cultural bias is a valid concern given that a greater proportion of African American and Native American children in the United States are placed in foster care relative to Caucasians (U.S. Department of Health and Human Services, 2003).

The findings of the current research have implications for therapists in highlighting the importance of parents responding to their infants signals and staying in step, whatever the pace of play for the family. This is reflected by the findings that infants seem to exhibit similar amounts of positive and negative affect in both the faster paced American family play and the slower paced Swedish family play, and that American parents appeared to be responding to their infants' contributions with more affirmations to keep the interaction in step.

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