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## THE BASIC STRUCTURE OF METACOMMUNICATION IN INTERSUBJECTIVE FUN-INTERACTIONS BETWEEN MOTHERS AND INFANTS: ANALYSIS OF TWO CONTRASTING CASES

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### Abstract

In this study, the basic factor regulating successful metacommunication in mother-infant fun-interaction was explored. As fun-interaction contains maternal pretending actions, it was assumed that the infant has to develop metacommunication skills to identify his/her mother's play-intention in order to respond with laughter. To collect video-data for this study, mothers were asked to keep a 'Video Diary' every week. For this report, two infants, one who laughed most frequently and one who was distressed most often were selected from 19 infants who were participants of an original project. The observation covered the period of infancy from 6 to 12 months of age. From the collected video-data, the time-point when laugh/distress was observed was identified as the 5 second base-point segment and a 45-second-time-sequence consisting of four 5-second segments before, at and after the base-point and the base point itself was defined as an episode. Frequency of pretending/literal actions of the mothers engaged, coordinated emotional expressions between the children and their mothers, and their voluntariness were analyzed. Results showed 1) the mother of the most laughed infant used pretended actions more often than the other, 2) her laugh-evoking actions showed an elaborated fluctuation pattern shifting her actions from pretense to seriousness or conversely at the base-point, 3) it was more developed with her child age. It was suggested that the individual style in infant's metacommunication may be fostered depending on his/her mother's intersubjective selection of action mode.

**Key Words:** metacommunication, intersubjectivity, fun-interaction, mother-infant, laugh

### INTRODUCTION

Presence of a partner in a close relationship serves not only as a resource of sense of security and as a secure base for us to challenge and overcome strange environments as the attachment studies have theorized. It also serves as an agent of our shared enjoyment. According to Izard (1972), we mainly feel enjoyment when a) we can make the loved person happy by means of doing some adventure together, or by our presence; b) we find that his/her concern is to direct us towards joy; c) we share the same experiences with him/her. This tells us that to share positive emotions is fundamental in any love relation as Izard (1991) suggested and that joy experiences in parent-child relations grow into a sense of mutual trust and love toward others. In daily life, it is often observed that

parent-child, siblings, good friends, lovers, or couples enjoy “fun-interactions”. Fun-interaction is laugh-making interaction intending to share enjoyment through humor, joking, pleasantries, comical acts, clowning, teasing, exaggerated gestures and voices, and the like. Fun-interaction is also a distinctive feature of close relations. Dunn’s (1988) observation described lively how skillfully two year-old children engage in fun-interactions with their mothers and their sibling as humorists, a tease, and a joke-maker.

However, researchers seem unconcerned with this subtle, vague, discursive, and irrational human activity. Allport (1959) strikingly called the negative attitudes ‘the tenderness taboo’ --which reflects suspicion significance of studying such subtle voluntary actions as humor, love, laugh, or ecstasy-- almost a half century ago. It may be generally agreed that positive emotion is one of central features of human relationship. In spite of that, the mainstream of emotional studies has focused on rather discrete affects (cf. Sroufe, 1995), or understanding (cf. Saarni & Harris, 1989) of individuals than emotion in inter-personal interaction. For instance, Izard (1993) wrote her speculation that one of the first affective-cognitive structures can be organized by the associative bond of enjoyment and the image of the mother’s face. This idea aimed to demonstrate how the initial structure of infants becomes developmentally a complex nexus of affect-cognition, which constitutes the mental representation of an attachment figure. Although this proposal was itself worth studying, in the process of the consideration, she failed counting two further important facts. First, both infant and mother have emotions and they enjoy exchanges of their emotional expressions mutually. Second, therefore, emotional expression to the partner or the attachment figure in an interaction is a communicative display. Emotional expressions are not isolated personal activities, but gain their significance in a frame of emotional communication/interaction with the partner. In this sense, emotional communication is intersubjective (Trevarthen, 1979) and metacommunication underlies it (Bateson, 1956).

In this article, therefore, fun-interaction is viewed as one aspect of emotional communication and is based on metacommunication to share feelings of intimacy. The basic question to be answered here is whether, when and how infants can understand an undercover message conveyed by such a thing as mothers’ laughter-evoking extraordinary attempt at a funny, comical, exaggerated teasing, or tickling act. For this purpose, it is explored from a viewpoint of metacommunication what the fundamental structure is and what factor primarily regulates fun-interaction between mother and child. As mother’s acts in fun-interaction are somehow unusual or extraordinary and may contain pretense or deception, it is assumed that infants do not respond with laughter unless they develop skills to extract the mother’s play-intention from them. This point was the issue of “an old dispute” between McGhee (1977) and Pien and Rothbart (1980). In the discussion on the function of incongruity as a producer of laughter, McGhee insisted from the viewpoint of the Piaget’s concept of reality assimilation that the prerequisite condition to laugh at a funny thing is attainment of cognitive congruity. He maintained that a child has to pre-acquire a notion of how “things should be in nature” to find the funny aspect of things. Thus, he denied the possibility for young infants who have not yet developed this notion to express laughter about a funny thing. On the other hand, Pien and Rothbart argued the possibility of infant’s laughter at humorous objects because laughter is raised

at a phase shifted from excitation aroused by an unexpected event or surprise into relaxation to indicate feeling security in the excitation-relaxation cycle. Then, according to their insistence, even a mother of a four month-old infant can draw laughter from her baby by means of this incongruity strategy. In their idea, the required condition to evoke laughter is not the infant's attainment of cognitive schema, but his/her excitement and consequent mother's laughter or something to express security toward her baby. Sroufe and Wunsch (1972) also investigated empirically a relation between types of stimuli (auditory stimulation, intrusive tactile stimulus, social games, and socio-visual events, i. e. unnatural acts) and elicited laughter in infants from 4 to 12 months. The results demonstrated that in older infants, especially from 10 to 12 months, laughter was elicited by socio-cognitive stimuli while in younger infants it was done by physical stimulus. This study provided evidence that there was a developmental shift in the effective elicitors of laughter from provocative stimulus to cognitive incongruity in the second half of the first year of life. The findings suggested that laughter is a product of a sharp tension fluctuation, which is achieved by developmental sophistication of cognitive ability to assimilate novel experiences. Along this line, Sroufe (1979) also proposed a developmental postulation that infants around 9 months of age are "affectionate beings" because they evaluate events affectionately by applying cognitive incongruity between anticipation and consequence, and their affection is aroused by the event. As a result, the event is assimilated into a schema of good or bad things with affective tone depending on the context. Thus, cognitive incongruity is the central factor of those studies.

Although those studies demonstrated a basic structure of laughter, they obviously missed the crucial point that playful mother-child interaction is intersubjective. Göncü (1993) attempted to theoretically analyze social pretend play in peer relations from a viewpoint of intersubjectivity and concluded that intersubjectivity develops simultaneously on three panels; sharing emotional experiences, metacommunication of being in pretense, and communicative devices. This consideration suggested that intersubjectivity and metacommunication are inseparable (Trevarthen, 1988, 1993), although Bateson's (1956) original definition ignored this point. Göncü (1993), further raised a need to examine that children are motivated to share their worlds in pretend play from very early on in life. However, previous studies on peer play in younger children have been done without inquiring origins of metacommunication (Bretherton & Beeghly, 1986). This may mostly come from the ambiguity of Bateson's (1956) original definition because he did not show the structure of metacommunication, but described his observation of monkey's play fighting at a zoo anecdotally. He did not consider if it was universal beyond species or not. In his book with the catch phrase "the spirit of the Batesonian tradition", Stolnik (1989) also wrote that the two-month-old infant is involved in this very high level of logical abstraction (metamessage), as are all baby animals. This statement denotes clearly that he regarded metamessage (metacommunication) as an innate communicative function. Therefore, we still need to try to refine the concept of metacommunication. Stern's (1986) theory that metamessages are carried by various temporal attunements seems to suggest the direction in which we move. In this sense, fun-interaction may be one ideal phenomenon to examine intersubjective pretense and its metacommunication because in it, both child and mother must be able to "read" the

intersubjectivity mutually as Stern (1986) suggested.

In this study, through comparison of two contrasting boys' emotional expressions in fun-interaction with their mothers, we examine what the primary factor is that enables them to receive maternal intentions to make them laugh.

## METHOD

### *Participants*

The participants of this longitudinal study were two boys (Naoya & Kenta) and their mothers. They participated from the children's ages of 6 to 12 months. They were selected from 19 mother-infant pairs who were participants of the "Fun-Interaction in Infancy" project. Naoya was the child who laughed the most frequently, while Kenta was the one who showed the most distress. Both children are Japanese and were living with their parents in a megalopolis in Japan. Both mothers were householders.

### *Procedures*

Both mothers were asked to videotape their playful interaction with the child at home by themselves for the sake of their own commemoration of the child's development at each month of age. After finishing this study, copies of the recorded videotapes were given to them. This methodology is called "Video Diary of Child Development" (Nakano, 2000). This methodology was invented because usually people engage in fun-interaction only in a relaxed secure situation, so it is very hard to observe it in an experimentally structured situation. Mothers were instructed to stop recording whenever the child was resistive and resume it another day. However, the total duration of each recording required at least 30 minutes. Naoya's tapes were successively collected through all 6 to 12 months of age, but Kenta's mother missed recording at nine and 11 months of age. So, in this study, data analysis was executed on the recorded materials from 6, 7, 8, 10, and 12 months of age.

### *Coding of Observational Data*

*Episodes.* First, the time point (base point) that the child started to laugh, induced laughter or distress to his mother's act, or the mother started to tickle her child was identified on the video materials for each month. Then, to examine the antecedent and the consequent of behavior, a time point of 20 seconds before, at and after the base point and the 5 second base point itself was decided (total 45 minute period) and extracted as an Episode.

*Coding categories and reliability.* Each episode was divided into nine 5-second-time-segments. Both mother's and child's acts within each segment were coded into categories which are as follows.

#### *Mother*

- Action Mode
- Contingent Emotional Expression
  - Literal
  - Pretense
  - Serious
  - Smile
  - Laugh

#### *Child*

- Emotional Response
- Smile
- Induced Smile
- Laugh
- Distress
- Voluntariness
- Passive
- Coordinate
- Initiate

These are exhaustive and mutually exclusive within each dimension. Two coders independently coded all videotapes received from both families and the percent agreement for the coding was as follows: Identification of episodes 100 %, mothers' acts 92.1 % (90.2 to 100%), infant's acts and responses 86% (77.8 to 96.3%).

Data Transformation and Leveling. The recording time in each month and between Naoya and Kenta was different. So, all data of frequency were recalculated to be frequency per 30 minutes and presented in percentage.

### RESULTS AND DISCUSSION

As statistical analysis is still ongoing at the moment, an outline of the main findings is presented here.

#### General Tendency of Episodes

Figure 1 shows frequency of three types of episodes for both children: Laugh, Induced Laughter, and Distress through the observed months. The results depicts individual differences between both boys' emotional reactions to the maternal attempts to make the child laugh. Clearly, Naoya expressed laughter more often and rarely showed distress, while Kenta was characterized by both expressions of joy and distress, especially a high frequency of distress at 7 & 8 months of age. As both mothers recorded playful interactions (at least from the mother's viewpoint), the most plausible child's reaction

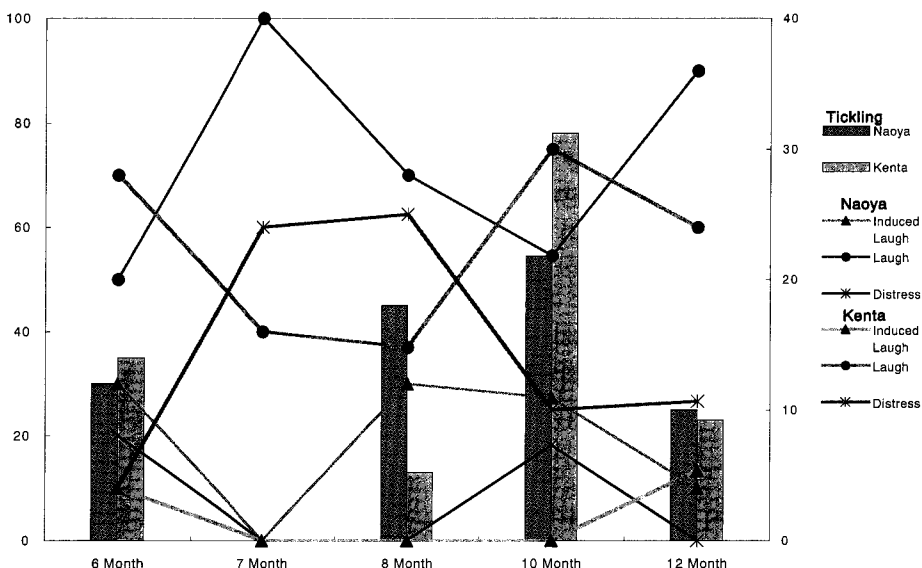


Figure 1 Comparison of the two children in frequency of episodes in three types of emotional responses and in mother's frequency of tickling.

was undoubtedly laughter, not distress. Then it is easily understood that the child's distress indicates their failure in sharing playfulness which their mother intended through metacommunication. Therefore, Kenta and his mother seem to have had some difficulty in metacommunication through the observed period, as compared with Naoya and his mother.

The results of maternal tickling in Figure 1 also show their individual differences in the mother-child relationship. Naoya's mother employed tickling as if she expected to compensate for less occurrence of laugh when his response of laughter was decreased. Increase of his induced laughter also shows this tendency and implies his mother's motivation to share fun with him. In contrast, Kenta's mother's frequency of tickling was likely to co-occur with a relatively high frequency of her son's laughter. This may indicate her successful attempts of tickling. However, higher frequency of his distress also suggests that the mother's tickling may be, so to speak, a double-edged sword. Tickling seems to have had a different function between the pairs.

In the following section, we examine what factor produced individual difference in success and failure in metacommunication of playfulness between two mother-child pairs.

#### *Relationship between Mother's Action Mode and Child's Emotion Responses*

Figures 2 A to E show how the mother's pretense/literal acts affected her child's successful engagement in metacommunication. It manifests that Naoya's mother used pretended acts more often than Kenta's mother did, except at 7 months of age. Considering this difference, combined with the difference in the child's emotional expressions, it can be postulated that the possible basic factor to enable metacommunication of playfulness underlying mother's humorous, comical acts or teasing is pretense. This result also demonstrates that infants can "read" funniness of pretense from earlier months of life than previous studies (McGhee, 1977; Sroufe & Wunsch, 1972) have shown.

#### *Relationship between Mother's Expressions and Child's Emotion Responses*

In the above result, the reason why Naoya expressed laughter more than Kenta may be because his mother also laughed contingent with her acts and he may have attuned to the expressions. Then, relationship between the mother's expressions contingent with her acts and the child's emotional responses was examined. The results are presented in Fig. 3 A to E. Interestingly, in contrary to the expectation, Kenta's mother laughed more frequently than Naoya's mother did. Her laughter was often expressed around the base point, when Kenta also expressed laughter or distress. In contrast, Naoya's mother continuously expressed smiling and only occasionally laughed. Therefore, it can be concluded that the mother's expression is not a candidate of control factor of metacommunication.

#### *Child's Voluntariness*

In the interaction with the mother, the tendency of how both children participated voluntarily was examined because the child's voluntariness, i. e. degree of active involvement in the interaction, may have affected sensibility of metacommunication. However, as seen in Figure 4 both children showed rather similar tendencies through out the observed

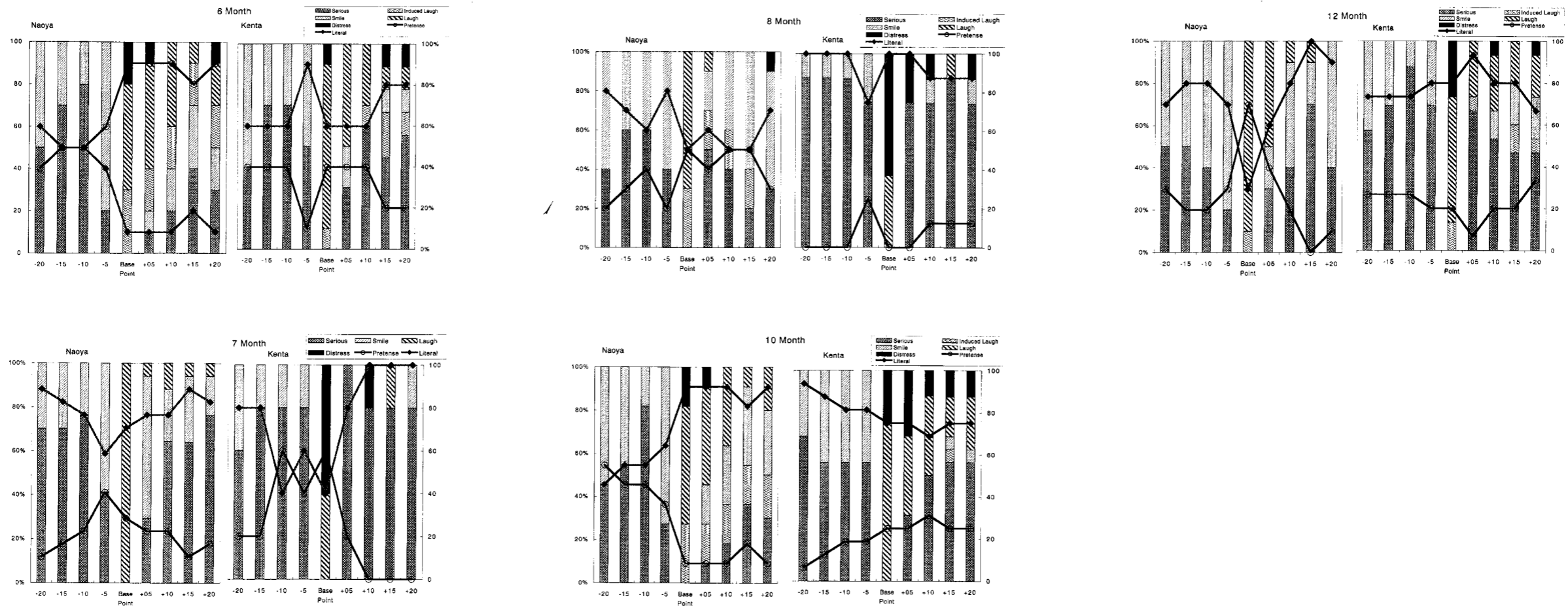


Figure 2 Correlation between frequency of pretending/literal actions that the mothers of the two children engaged in and emotional expressions in their responses at each time-segment in an episode of each observed month.

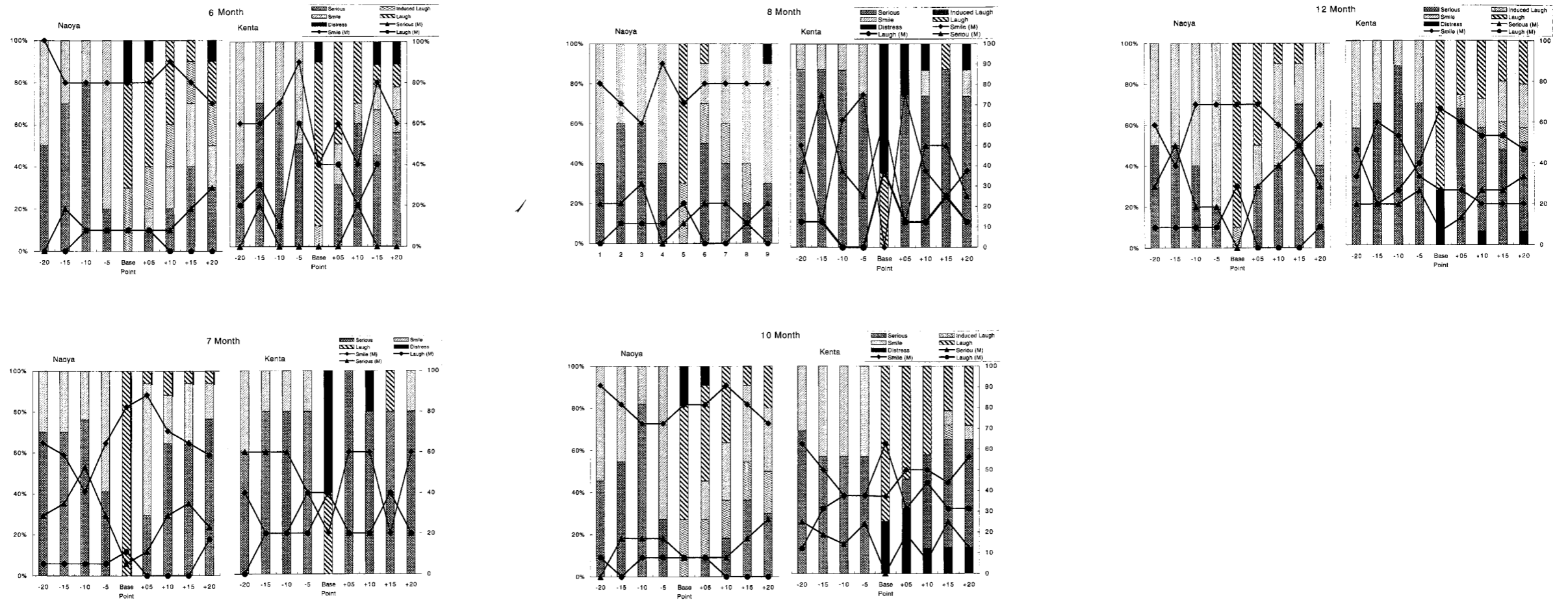


Figure 3 Correlation between emotional expressions of the mothers of the two children contingent to their laugh-evoking actions and emotional expressions in the children's responses at each time-segment in an episode of each observed month.

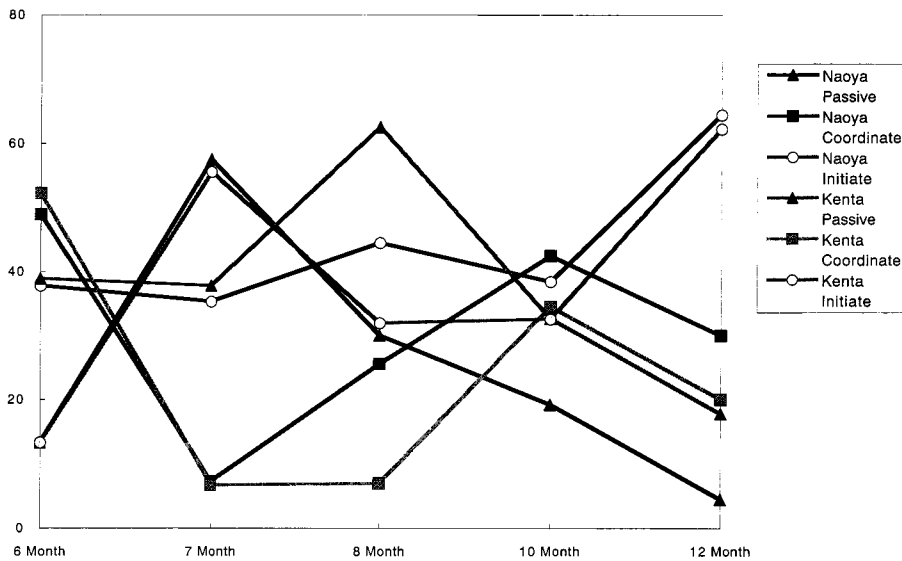


Figure 4 Comparison of developmental change in three types of voluntariness between the two children.

period. From 10 months of age, both children became more initiative and less passive. This tendency can account for a relatively high frequency of laughter at 10 and 12 months of age presented in Figure 1; however, this is not plausible to be the accountable factor of the individual difference between both mother-child pairs in metacommunication.

#### *Mother's Temporal Action Pattern*

As many previous studies (McGhee, 1977; Pien & Rothbart, 1980; Sroufe, 1979, 1995, Sroufe & Wunsch, 1972) have noticed the special stimuli pattern for eliciting laughter, the temporal fashion of the mother's action such as a steep, sharp tension fluctuation may have been effective to make the child laugh. Thus, the degree of fluctuation from one time-point to the next time-point (lag 1 time-point) was calculated. As Figure 5 illustrates, there is a difference in the interaction strategy between the two mothers. Naoya's mother was using an elaborate strategy of fluctuation effective at the base-point. In other words, she shifted expertly her action mode from pretense to seriousness or conversely at this point. In contrast, the pattern of Kenta's mother was not so organized at the base-point. Their changing pattern as the children developed also showed a contrast between them. While Naoya's mother was elaborating the fluctuation strategy more and more to be steep and intensive, Kenta's mother moved in the opposite direction to use more moderate or plain strategies. Thus, they each developed individual ways of mother-child interaction during infancy.

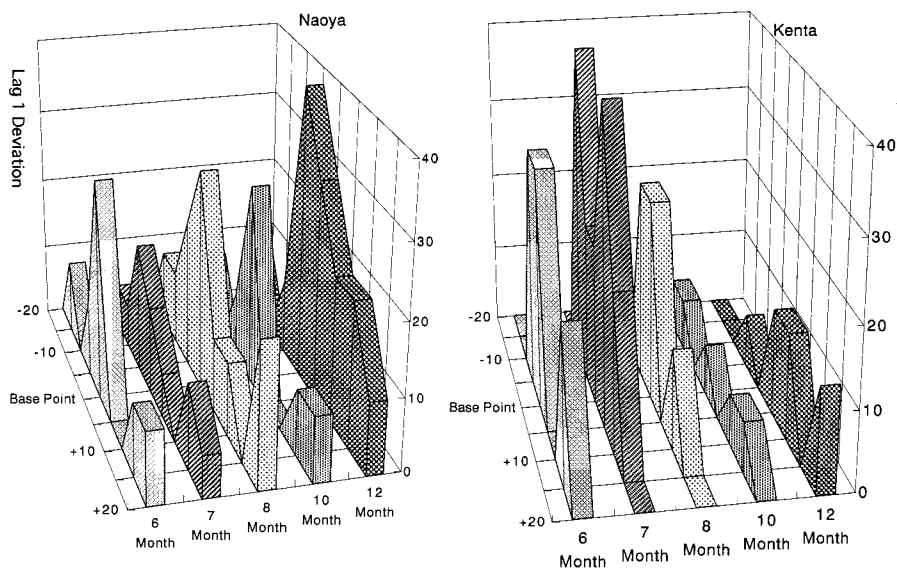


Figure 5 Longitudinal developmental change in the fluctuation pattern between frequency of pretending/serious actions at one time-segment and the fluctuation pattern at the next segment that the mothers of the two children showed.

## CONCLUSION

As results presented in Figures 1 and 4 show, at their first birthday, both Naoya and Kenta became infants who often laugh at their mothers' acts and spontaneously involve in fun-interaction with the in mothers. However, it is concluded that they participated in the interaction each engaging in their own style of metacommunication with their mothers as well as the mothers developing their interaction styles to meet with the emotional reactions of their children. This finding seems to be worthy of further studies to examine the direction of development and individual difference of metacommunication.

## REFERENCES

- Allport, A. (1959). *Understanding human nature*. New York: Premier Books.
- Bateson, G. (1956). The message "This is play." In B. Schaffner (Ed.), *Group processes: Transition of the second conference*, 145-241, New York: Josiah Mancy Foundation.
- Bretherton, I. & Beeghly, M. (1986). Pretense acting "as if". In Jeffrey J. Lockman & Nancy L. Hazen (Eds.), *Action in social context*, 239-271. New York: Plenum Press.
- Dunn, J. (1988). *The beginnings of social understanding*. Cambridge, MA: Harvard Univ. Press.
- Göncü, A. (1993). Development of intersubjectivity in social pretend play. *Human Development*, 36, 185-198.
- Izard, C. E. (1972). *Patterns of emotion: a new analysis of anxiety and depression*. New York: Academic Press.
- Izard, C. E. (1991). *The psychology of emotions*. New York: Plenum Publishing.
- Izard C. E. (1993). Four systems for emotion activation: Cognitive and noncognitive processes. *Psychological Review*, 100 (1), 68-90.
- McGhee, P. E. (1977). A model of the origin and early development of longitudinal-based humor. In A. J. Chapman & H. G. Foot (Eds.), *It's a funny thing humour: The International Conference on Humour and Laughter*. Oxford: Pergamon Press.

- Nakano, S. (2000). Development of intersubjective understanding in mother-child playful interaction. In Tajima Nobumoto & Nishino Yasuhiro (Eds.), *Handbook of methodology for developmental studies*. Pp.206-208. Tokyo: Fukumura Shuppan (In Japanese).
- Pien, D. & Rothbart, M. (1980). Incongruity, humour, play, and self-regulation of arousal in young children. In P. E. McGhee & A. J. Chapman (Eds.), *Children's humour*. London: John Wiley and Sons.
- Saarni, C. & Harris, P. L. (1989). *Children's understanding of emotion*. Cambridge, MA.: Harvard University Press.
- Sroufe, L. A. (1979). Socioemotional development. In J. D. Osofsky (Ed.), *Handbook of infant development*. Pp.462-518. New York: John Wiley and Sons.
- Sroufe, L. A. (1995). *Emotional development*. Cambridge: Cambridge University Press.
- Sroufe, L. A. & Wunsch, J. P. (1972). The development of laughter in first year of life. *Child development*, 43, 1326-1344. Cambridge: Cambridge University Press.
- Stern, D. (1986). *The interpersonal world of the infant*. New York: Basic Books.
- Stolnik, T. (1989). Bateson's concept of mental illness. Robert W. Rieber (Ed.), *The individual, communication, and society: Essays in memory of Gregory Bateson*. Cambridge, MA.: Harvard University Press.
- Trevarthen, C. (1979). Communication and cooperation in early infancy: A description of primary intersubjectivity. In M. Bullowa (Ed.), *Before speech: The beginning of human communication*. Pp.321-347.
- Trevarthen, C. (1988). Origins and directions for the concept of intersubjectivity. In B. Rogoff (Ed.), *Society for Research in Child Development Newsletter*, 1-4. Chicago: University of Chicago Press.
- Trevarthen, C. (1993). The self born in intersubjectivity: The psychology of an infant communication. In U. Neisser (Ed.), *The perceived self*. Cambridge: Cambridge University Press.

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