FEEDING AS A COMMUNICATION BETWEEN MOTHER AND INFANT IN JAPAN AND SCOTLAND

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Abstract

Development of infant independence is largely based on the development of feeding, or weaning. In the feeding interactions, mothers have a strong expectation of their infants' behaviors, and the infants have desires of their own which do not always meet these expectations. Feeding is, thus, a communicative situation of control, conflict, cooperation, and/or negotiation between them, which reveals cultural fundamentals of mother-infant relationships. The present study compared mother-infant feeding interactions in Japan and Scotland. Japanese data were obtained longitudinally from 7 mother-infant dyads soon after the introduction of solids until 3 years of age or less (Studies 1 and 3), whereas Scottish data were cross-sectional with 72 dyads during 20 months postpartum (Study 3). Food was initially provided by mothers, and refusal of the passive feeding was considered a transitional behavior to autonomous eating. The Japanese infants showed refusal more frequently than the Scottish infants. Mothers were not just food providers but behaved empathetically during infant food-taking, and this tendency was more evident among Japanese mothers. Mothers in Japan often ate food left by the infants, which was not observed in Scotland. In Study 2, in order to examine the meanings of the empathetic behavior, it was observed in 21 Japanese mothers of 7-month-olds under three different experimental conditions: that is, maternal feeding, paternal feeding with mothers looking at them from 0.5 m and from 2.0 m away. The behavior was significantly more frequent when the mothers themselves fed the infants, suggesting that the behavior was an indicator of the mothers' psychological involvement in the children during the feeding situation. Motherhood and mother-infant communication in the two cultures and their possible determinants were discussed on the basis of these findings.

Key Words: mother-infant communication, solid-feeding, Japan and Scotland, weaning, empathetic behavior, refusal of passive feeding

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Introduction

Mothers and infants are considered to be in a positive relationship with mutual affection. But the development of the relationship could be considered as a process of mothers' emancipation from the burdens of infant care as well as a process of infants' achievement of autonomy. Feeding is essential to the survival of any organism, and mammalian infants have to be nourished by the caregivers. It is possible to say that the mothers of fetuses and newborns are substitute eaters of solids for them. Trivers (1974) suggested an idea of mother-offspring weaning conflict from the sociobiological viewpoint, and this could be outlined by the changes in the ways the offspring are nourished from breast milk to solids. It means a shift of responsibility and burden from mother to offspring in food-taking. Human infants are unique as a primate in being fed solids by caregivers, and, thus, normally dependent on the mothers' assistance in eating at the start of solid-feeding but soon become independent.

Ways of reducing the burden may be different in cultures with different standards for mothers' involvement in infant care. In feeding interactions, mothers have a strong expectation of their infants' behaviors based on societal customs, and infants have their own needs and wishes which do not always meet these expectations. Feeding is, thus, regarded as a communication of control, conflict, cooperation, and/or negotiation between mother and infant, which reveals the cultural fundamentals of mother-infant relationships and their development (Negayama, 1993).

Weaning processes are describable in at least 3 different ways : from the viewpoint of (1) change in the list or preference of food (e.g., Pliner, 1994 ; Wright, 1989) ; (2) change in the tool-use or eating behaviors (e.g., Connolly & Dalgeish, 1988 ; Norimatsu, 1993) ; and (3) change in communication between feeders and infants as described above. Although these are interrelated, this study focuses on the third point with an emphasis on the infants' autonomy and the mothers' empathetic nature toward their infants at the moment of feeding. Interactions between mothers and infants in the feeding situation are, thus, considered to clearly show development in the relationship, and a cross-cultural comparison highlights the significant characteristics in mother-infant relationship in each culture. However, mother-infant interactions during solid-feeding have not been focused on previously as a context of communication, and the present study is an exploratory attempt of this.

STUDY 1

As a first study, I made a naturalistic longitudinal observation of solid-feeding in the Japanese home, focusing on the development of self-feeding in the normative feeding interactions. Details of the study are reported elsewhere (Negayama, 1993), and a brief summary is provided to facilitate making cross-cultural comparisons in Study 3.

Participants were 7 Japanese mothers and their infants, who were living in the urban area of Hyogo or Osaka Prefecture and had agreed to participate in the observational study of solid feeding in the home. Behaviors of the seven dyads during spontaneous solid-feeding were videotaped from its beginning to the end in the home once or twice a month with a Sony video camcorder. The time of start and end of feeding was decided by the mothers. The study was started soon after an introduction of solids, and ended at various

times before 3 years of age. Data are shown here only until 20 months because of a decrease in participants. Both mothers and infants were targets of the observation. The mothers were instructed to ignore the observer, and the situation was kept as natural as possible. When infants were distracted by the observer, the observer hid himself in order to remove himself from the situation. Data were analyzed with 1/0 sampling with 5-second intervals, and the results are shown as percentage ratios.

Figure 1 shows a shift in the ways of food-taking by the infants. The data were shown as median values of 7 dyads for each age block. Solids were introduced and provided totally by mothers in the first stage of weaning at about 5 months, and at about 1 year of age the infants began to take food by themselves mainly with their own hands. Self-feeding with utensils began after one year of age, but was not very frequent yet at 18-20 months of age.

In the period of transition from passive to self-feeding, cooperative interactions between mothers and infants were often observed. For example, the infants actively pulled on the utensils with which mothers were feeding, or took food by hand from utensils being offered by the mothers. However, the feeding interactions were not always positive, and the infants often showed refusal in response to maternal feeding attempts. This behavior included active rejection and a mere closure of the mouth to show their unwillingness to take the food. The behavior increased steadily with age as Figure 2 shows. The behavior suggests a presence of disagreement in motivation of feeding between mothers and infants, indicating growth of the infants' autonomy in eating solids. Infants sometimes fed mothers in a playful context after 1 year, and this also indicates their increased partnership with their mother in feeding at this stage.

Mothers very often showed an empathetic eating-like mouth behavior just when infants took food or soon after. This empathetic behavior was actually a reflection of the infants' eating. In other words, the mothers fed the infants and at the same time behaved as if they were fed. The infants did not always look at the mothers at the moment of the occurrence. The behavior, therefore, seemed to indicate the mothers' sharing of the same psychological states with the infants rather than intentionally guiding the infants to take food. This behavior is of extreme importance in viewing feeding as a communication, because this formed a psychological context for communication between mothers and

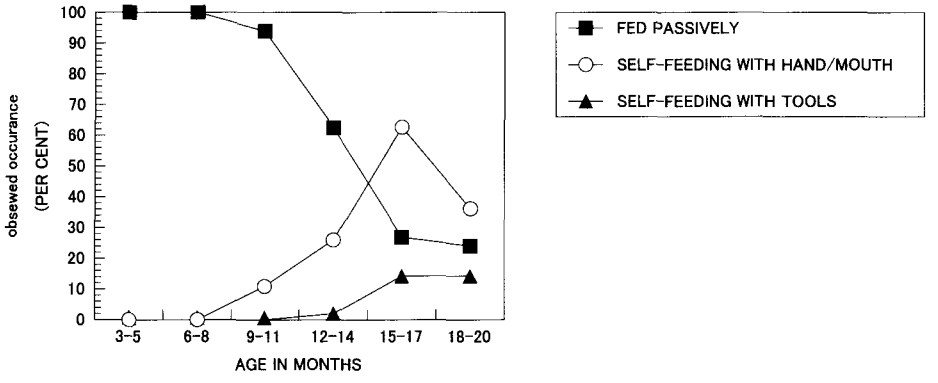

Figure 1 Ways of feeding in Japanese children.

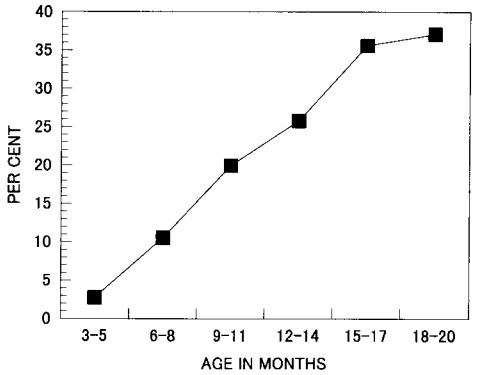

Figure 2 Percentage of occurrences of child refusal of food to mothers' feeding attempt.

infants.

As Figure 3 shows, the behavior was initially not very frequent, then increased rapidly, and decreased after 1 year. This change in behavior represents the mothers' once becoming highly empathetic to the infants and then reducing their empathy to infants in this situation. This strongly suggests a change in the mothers' expectation for the infants' eating.

Mothers in Japan often ate food or food particles left by the infants, which was almost never observed in Scotland with an exception of auto-licking of feeding fingers. Japanese mothers were also different from Scottish mothers in sharing their own food with infants.

STUDY 2

Study 1 gave a general picture of development in feeding interactions between Japanese mothers and infants. In Study 1, an importance of infant refusal and maternal empathetic behavior was pointed out in order to understand the interactions as communication between the two partners. The empathetic behavior could be interpreted to reflect the mothers' expectation towards the infants' active participation in eating, and therefore

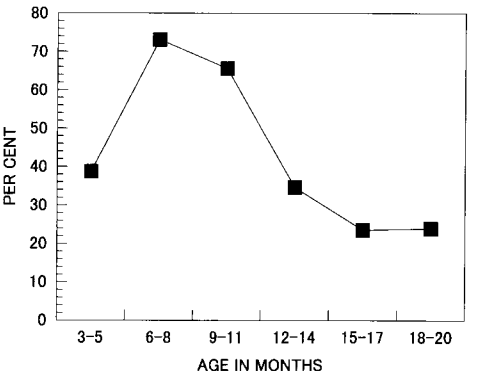

Figure 3 Percentage of occurrences of mothers' empathetic behavior to infants' feeding.

their psychological involvement in the interaction. The behavior is especially interesting when regarding feeding as communication because of its intersubjective nature. In Study 2, then, an experimental situation was supplementarily set up to determine the psychological state of mothers showing these empathic behaviors.

Participants of Study 2 were 21 Japanese mother-offspring pairs at the age of 7 months when occurrences of empathetic behavior was at its peak in Study 1. They voluntarily agreed to participate in the study. The experiment was carried out during normal feeding in the home, and empathetic behavior of the mothers was videotaped and compared in 3 different situations: (1) when they fed the infants; (2) when they just watched the infants being fed by fathers at about 0.5 m (NEAR); and (3) at about 2.0 m, away from the infants (FAR). The mother, the father, and the infant were positioned in a v-shape with the infant at the center, and the angles made by the parents to the infants were kept as consistent as possible. The infants were fed 10 times for each condition with a random order given by the experimenter.

Figure 4 shows average ratios of the mothers showing the empathic behavior at the moment of the infants' eating for each condition and indicates that the behavior was most frequent when the mothers themselves were the feeders. When the fathers fed, the behavior still occurred in the mothers but was significantly less frequent (Wilcoxon test). The difference in the occurrences between the NEAR and FAR conditions was not significant. This result strongly suggests that the empathic behavior was an indicator of the mothers' psychological involvement in the interactions as stated above. In other words, it suggests that mothers of Study 1 attended less to infants' feeding after one year of age, probably because of an increase in the infants' autonomy in eating.

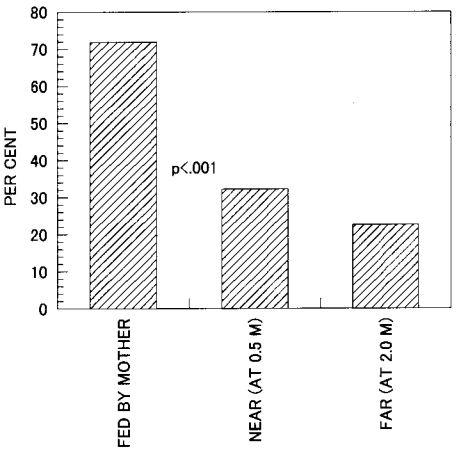

Figure 4 Mothers' empathetic behavior under three different conditions of child feeding.

STUDY 3

Feeding interactions between mothers and infants were observed in the Scottish home and were compared with the behaviors of Japanese dyads. The Japanese data shown below are the repetition of Study 1. The methods of data collection in Japan and Scotland

were not identical: Japanese data (Study 1) were longitudinal as shown above, and the Scottish data were cross-sectional with 12 dyads for each 3-month age block between 3 and 20 months of age, with 72 dyads in total (3 first-born and 3 later-born boys, and 3 first-born and 3 later-born girls, for each age block). The Scottish mothers and infants were all recruited in Edinburgh, and were all voluntary participants to the study as in Japan. Observations with a Sony video camcorder and analyses of the tapes in the two studies were both done by the same person (the author). As in Study 1, they were observed during normal feeding in the home with minimum intervention. The data were shown as median values for each country, and statistical significance in the differences between the two countries was tested by Mann-Whitney U test.

Before proceeding to the observational data of feeding, an interview data from 27 Japanese and 100 Scottish mothers on the age of introducing food other than milk is shown in Figure 5. The figure indicates the number of mothers introducing solids for each age, showing that the Scottish mothers were a little earlier in the introduction.

Returning to the observational data, the mothers' empathetic behavior is shown in Figure 6. Scottish mothers also showed this behavior, but it was generally less frequent than in Japan. This means that the Japanese mothers were more involved in the feeding situation than the Scottish mothers. Communication in feeding, thus, looked more

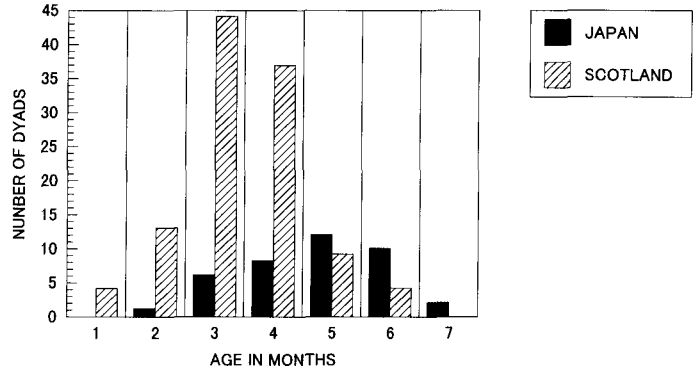

Figure 5 Ages of introduction of foods other than milk.

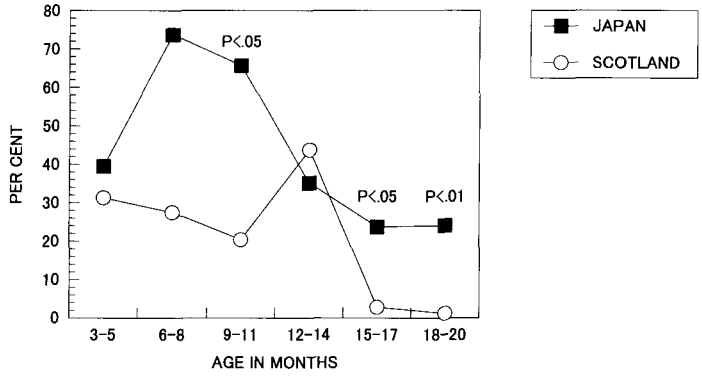

Figure 6 Empathetic behavior in Japanese and Scottish mothers.

empathetic toward their infants among the Japanese mothers. In Scotland, empathic behaviors did not increase in the later half of the first year and gradually reduced in frequency.

Japanese mothers' stronger involvement in infant feeding was related to the higher occurrences for the Japanese infants to be passively fed by the mothers (Figure 7). The Scottish infants, in contrast, showed slightly more self-feeding with hand/mouth than the Japanese infants in the middle stage (Figure 8). And the Scottish mothers reduced their attempts to feed infants by bringing food to the infants' mouths in the second year (Figure 9). Thus, Japanese mothers were involved in the situation and motivated to feed their infants more strongly than Scottish mothers, and these tendencies of the mothers were related with the infants' passivity in eating solids. This difference was more evident in the second year of the infants' life.

However, as stated above, the Japanese infants were not simply passive eaters but actively responded with a refusal to the mothers' highly motivated feeding attempt (Figure 10). This was thought to be the Japanese infants' regulation of weaning to discourage the mothers' excessive motivation to feed them as caregivers.

In taking all these results together, the Scottish mothers were inclined to start and end weaning earlier with an expectation of the infants' earlier autonomy, whereas the

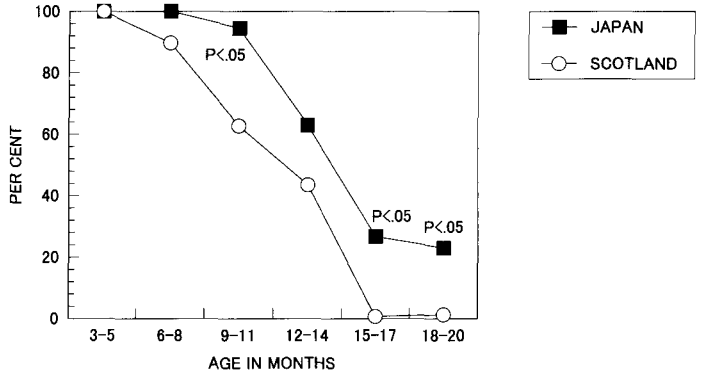

Figure 7 Passive feeding in Japanese and Scottish children.

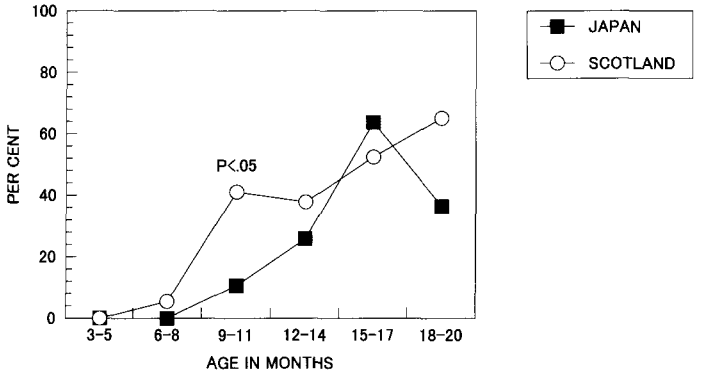

Figure 8 Self-feeding with hand/mouth in Japanese and Scottish children.

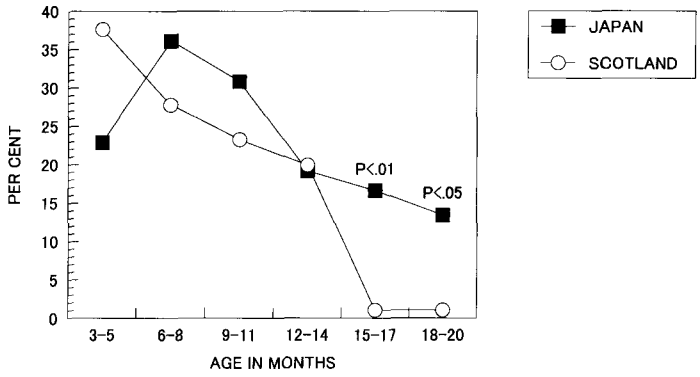

Figure 9 Feeding attempt in Japanese and Scottish mothers.

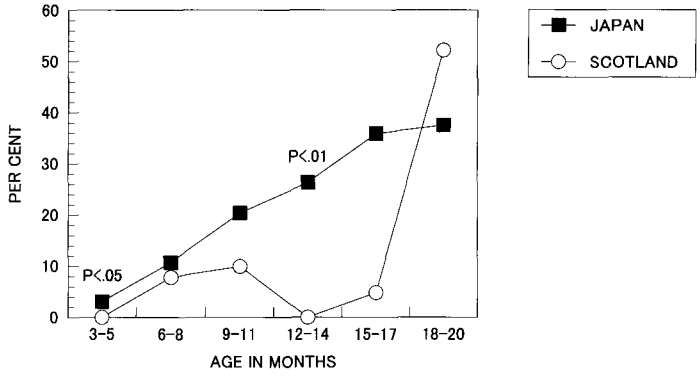

Figure 10 Child refusal of food to mothers' feeding attempt in Japan and Scotland.

Japanese mothers wanted to keep their role as active caregivers longer. Thus, observing mother-infant interactions in the feeding situation was very effective in describing their relationship and its development, and cross-cultural differences.

Discussion

Feeding is an everyday situation where both positive and negative interactions take place between feeders and recipients and is very important for children to learn a communication standard of the culture. Interactions in weaning outline early mother-offspring relationship.

From the Japanese data of Studies 1 and 2, infants were initially fed solids passively by their mothers, then began to feed themselves mostly with hands after 1 year of age. When infants changed from passive to active eaters, mothers and infants became cooperative in their feeding. However, infants also showed refusal to the mothers' feeding attempt, and it increased steadily with infants' age, showing an increase in their autonomy. Mothers' empathetic eating-like mouth behavior at infants' food-taking once increased in the first year, and then decreased, which seemed to reflect the mothers' psychological involvement at feeding. Stronger maternal empathy in Japan was also suggested by their ambiguity in food belongingness and higher sharing of them.

Feeding interactions from the Scottish data in Study 3 also indicates the development in communication between mothers and infants and in the infants' autonomy. However, the Scottish mothers were less involved in the infant feeding or less empathetic as shown in the mothers' less frequent empathetic behavior and feeding attempts than in Japan. The Scottish infants were less frequent in being fed passively and in food refusal, and slightly more frequent in self-feeding than the Japanese infants.

Infants of both countries were, thus, fed passively in the beginning, and then began to self-feed mainly by hand and then by utensils. The weaning interactions observed here did not show any active rejection by the mothers to promote the offspring's weaning as Trivers (1974) assumed. The infants were initially obedient to the mothers' regulation, but they gradually became autonomous in the situation by active cooperative participation as partners and/or by refusal which was more evident in the Japanese dyads, and they achieved considerable independence in feeding by one and a half years of age.

The Scottish mothers were more inclined to take leadership to promote feeding independence whereas the Japanese mothers were highly motivated to feed their infants for a prolonged period with stronger involvement and empathy toward their own infants. When mothers showed empathetic behavior during infant eating, infants perceived this behavior with their own, making the infant eating situation a highly intersubjective experience. Repetition of this experience as communication between mothers and infants every day as well as interdependence in the Japanese mother-toddler dyads (Messinger & Freedman, 1992) may foster a sense of 'oneness' with the mothers in the infants.

However, at the same time, Japanese infants' refusal of maternal attempts during feeding worked to regulate the relationship from the infant side. This seems to be an active role played by the infants to lead the course of feeding independence within a certain adaptive range by limiting an effect of the mothers' excessive involvement.

To sum up, the characteristics of communication in the feeding interactions between the Japanese mothers and infants indicate the Japanese mothers' strong motivation to help or facilitate the infants as well as an important active role of the infants as regulators in the process of weaning. In Scotland, on the contrary, the mothers had stronger leadership to induce the infants' earlier feeding autonomy, and the infants conformed to it. This kind of nonverbal communication resulted in earlier independence among the Scottish infants' solid-feeding in comparison with Japanese infants. It appears to be a part of cultural transmission of self-other relationship patterns (e.g., individualism vs. collectivism; Fijneman et al., 1996) from parent to offspring.

Such different combinations of the mother-infant behavioral systems between Japan and Scotland suggests a complementary relationship between mother and infant to keep the weaning processes from deviating from a normal range. From the general systems perspective (Marvin, 1997), this cooperation of mothers and infants is important to the infants' appropriate development, and cultural differences exist in the different proportions of initiatives taken by the mothers and infants.

In the present study, Scottish mothers were less enthusiastic in feeding and their infants ate solids more autonomously in the first year of age than in Japan. However, Norimatsu (1993) reported a little different picture among French children in public day care centers. Feeding development is actually determined by a combination of multiple

factors of the societal custom or norm and the equipments, the parents' expectations or attitude as caregivers and their decision of care-taking practices as well as their employment, the offspring's reactions to the practice, and so on. The present study focused on the parent-offspring communicative interactions in the course of weaning of the two cultures, but the interactions also may have been correlated with physical aspects of feeding such as foods and the utensils given to the infants. Further analyses are needed to examine effects of those physical determinants in order to get a more general ecological view of the feeding development.

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References

Connolly, K. & Dalgleish, M. (1988). The emergence of a tool-using skill in infancy. *Developmental Psychology, 25*, 894-912.

Fijneman, Y.A., Willemsen, M.E., Poortinga, Y.H. (1996). Indivisualism-collectivism : An empirical study of a conceptual issue. *Journal of Cross-cultural Psychology, 27*, 381-402.

Marvin, R.S. (1997). Ethological and general systems perspectives on child-parent attachment during the toddler and preschool years. In : N.L. Segal, G.E. Weisfeld & C.C. Weisfeld (Eds.) *Uniting Psychology and Biology*. Washington : American Psychological Association, pp.189-216.

Messinger, D. & Freedman, D.G. (1992). Autonomy and Interdependence in Japanese and American mother-toddler dyads. *Early Development and Parenting, 1*, 33-38.

Negayama, K. (1993). Weaning in Japan : A longitudinal study of mother and child behaviours during milk- and solid-feeding. *Early Development and Parenting, 2*, 29-37.

Norimatsu, H. (1993). Development of child autonomy in eating and toilet training : One- to three-year-old Japanese and French children. *Early development and parenting, 2*, 39-50.

Pliner, P. (1994). Development of measures of food neophobia in children. *Appetite, 23*, 147-163.

Trivers, R.L. (1974). Parent-offspring conflict. *American Zoologist, 14*, 249-264.

Wright, P. (1989). Feeding experiences in early infancy. In R. Shepherd (Ed.), *Handbook of the psychophysiology of human eating*. Chichester : John Wiley, pp.157-178.