



Japan–France–US comparison of infant weaning from mother’s viewpoint

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Background: Breastfeeding and weaning are strongly connected with infant–mother mutual autonomy, and hence are good touchstones to examine the characteristics of the mother–child relationship. Comparison of the weaning practice gives a framework to understand characteristics of the mother–infant relationship. **Objective:** The purpose of this study was to compare three industrialised countries concerning the relationship between feeding and weaning practices and its reasons, mother’s perception of child care, and of breast milk and formula. **Methods:** A questionnaire study on weaning practice was conducted for 310 Japanese, 756 French, and 222 American mothers with 4- to 20-month-old infants. **Results:** French mothers expected and had accomplished weaning at an earlier age of the infant, compared to Japanese and American mothers. Perceived insufficiency of breast milk was the leading reason for the termination of breastfeeding for Japanese mothers at the earlier stages, whereas *back to work* was the more important reason for French mothers. Japanese mothers were more negative in their image of themselves as mothers, whereas French mothers felt more burdened by child-care. Japanese mothers who terminated breastfeeding because of perceived breast milk insufficiency were also those who were less motivated to breastfeed. **Conclusion:** Weaning is a significant framework to interpret cultural differences in mother–infant relationship. The perceived insufficiency is interpreted as a solution of conflict between the social pressure to breastfeed and its burden.

Keywords: weaning; breastfeeding; formula feeding; Japan; France; USA

Introduction

Infant feeding and weaning provide the basic biological framework for the development of the mother–infant relationship. The cost–benefit ratio of breastfeeding is initially small, but gradually increases with the offspring’s development. Weaning reflects a departure from dependence on the mother by the offspring, and it is socio-biologically hypothesised as a conflict between mother and offspring (Negayama, 2011; Trivers, 1974).

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What mothers choose as their practice is determined by their own beliefs as well as the value system of the society and the supporting networks (Chalmers, Ransome, & Herman, 1987; Piper & Parks, 1996; Raj & Plichta, 1998). Medical staff and family members, especially the father and grandmother of infants (Al-Sahab et al., 2008; Isabella & Isabella, 1994; Littman, Medendorp, & Goldfarb, 1994; Matich & Sims, 1992), are important in the mothers' decision-making for feeding and weaning practices.

With this background of possibly conflicting supports and constraints, there could be a dilemma for mothers as they consider continued breastfeeding for their infants (McDade, 2000). Breastfeeding is terminated or supplemented by formula for various reasons, among which the perception of insufficiency of breast milk is a major one in various cultures (Hill & Simpson, 1985). Analysis of popular US magazines also shows great concern about the insufficiency of breast milk (Frerichs, Andsager, Campo, Aquilino, & Dyer, 2006).

Feeding and weaning practices are different among different cultures based on different child-rearing values, health care practices and economies of the society (WHO, 1981), and public attitudes toward them change rapidly (e.g. Ruowei, Rock, & Grummer-Strawn, 2007). The aim of the present study was to examine the relation between feeding and weaning practices, reasons for weaning choices, mothers' perception of breast milk and formula, and their feeling about parenting among the three industrialised countries of Japan, France and the USA. Comparisons were made of the impact of cultural value and social system on the feeding relationship. The perceived insufficiency of breast milk is a cue to understanding human nature and cultural variation, and could be an interesting touchstone of cultural differences in the mother–infant relationship.

Methods

Participants

Participants in the present study were 310, 756, and 222 mothers in Japan, France, and the US, respectively, and their demographic data are in Table 1. All mothers had an infant between 4 and 20 months at the time of survey. The number of mothers was fairly evenly distributed across the age range of infants. In France and the US, the proportion of working mothers was larger than in Japan, which is in accord with general statistics of working women aged 25–40 years of the three countries (Statistics Bureau, Japanese Ministry of Internal Affairs and Communications, 2011a,b).

Table 1. Description of participants.

	Japan	France	US
Number of participants	310	756	222
Infant's age in months	12.1 (<i>SD</i> = 4.9)	13.0 (<i>SD</i> = 4.6)	11.7 (<i>SD</i> = 4.3)
Mother's age in years	31.1 (<i>SD</i> = 4.2)	31.4 (<i>SD</i> = 4.6)	31.1 (<i>SD</i> = 5.3)
Mother's education, junior college or more	167 (53.9%)	541 (71.6%)	161 (72.5%)
Work/study outside the home for more than 5 hours in week	84 (27.1%)	572 (76.5%)	126 (56.8%)
First born infants	197 (63.5%)	444 (58.7%)	76 (34.2%)
Male infants	156 (50.3%)	402 (53.2%)	115 (51.8%)
Medical complications at birth	60 (19.4%)	214 (28.3%)	91 (41.0%)

Procedure

The mothers were recruited from several urban areas in each country in 2001–2003. To recruit a large population, including all types of feeding, mothers having an infant aged 4–20 months were recruited. In Japan, questionnaires were distributed to every mother at obligatory medical check-ups given at 4 months and later in five cities (Wako, Niiza, Asaka, Shiki, and Tokorozawa) in Saitama Prefecture, a suburb of Tokyo. In France, questionnaires were distributed to every mother having an infant between 4 and 20 months in all public day-care centres and Haltes-garderies (the latter used by non-working parents) in Toulouse city, and in some semi-private and family day-care centres in 12 different areas of Paris and its suburb (Aubervilliers, Boulogne-billancourt, Clichy, Issy-les-Moulineaux, Malakoff, and Neuilly cities). In the US, birth announcements published in the local newspapers were used for recruitment, and questionnaires were also distributed through paediatric offices and other clinics in Michigan. The percentages of mothers born outside each country are 0.1, 1.1, and 2.7 for Japan, France, and the United States, respectively.

The questionnaire with a return envelope and the information sheet were distributed to each mother by an intermediary of the institutions who collaborated on this research. An information sheet explained this research and consent procedure to the participants. Each mother was free to participate or not in this study, and the questionnaire was returned anonymously to the researchers by mail.

Questionnaire

We developed a questionnaire with 42 questions, partly based on the previous study (Negayama, 2000). The questions were as follows:

Questions about background information

Demographic data about the mother, infant, their family; information related to parturition and medical care given at the hospital.

Mothers' views of the advantages of breast milk and formula

These were evaluated with a 5-point scale of agreement (1 = strongly disagree, and 5 = strongly agree) for 11 items (*Nutritious, Good for the child's intelligence, etc.*).

Opinions about the mother's child-rearing

These were rated with a 4-point scale (1 = strongly disagree, to 4 = strongly agree) with 11 questions including 'I like being a mother', 'It is burdensome to raise a child', etc. The statements were selected from Ohinata (1988).

Questions about feeding and weaning

Ideal and actual length of breastfeeding, formula feeding, and mixed feeding (both breast and formula), and the methods to accomplish weaning were examined. Then the mother's satisfactions about the choice and duration of breastfeeding and formula feeding were rated with a 4-point scale (1 = very unsatisfying, and 4 = very satisfying).

Importance of the reasons for weaning their infants

These were rated with a 4-point scale (1 = not important, and 4 = very important) for each of 26 items ('new pregnancy', 'back to work', etc.) by the mothers who had already weaned their infants. Satisfaction for the method of weaning and length of breastfeeding were also rated with a 4-point scale. Then mothers selected the most important reason for weaning out of the list. Mothers were further asked to report the sources of advice and information on weaning from 14 items including 'Doctor(s)', 'Your mother', 'Observing child's behaviour', etc., and were then asked to select the most important source.

ANOVA and χ^2 analyses were applied to check the statistical significance in difference of quantitative and qualitative data among the three countries. Fisher's exact test was used when the data were insufficient for χ^2 analysis.

Results*Ideal age reported by mothers for terminating milk feeding*

The 3 countries differed in the ideal age for mothers to terminate exclusive breastfeeding (i.e. with no formula at all) (10.5, 5.7, and 9.2 months for Japan, France, and the US, respectively), $F(2,1024) = 96.15, p < .001$, but did not differ as to the ideal age for terminating exclusive formula feeding (i.e. with no breast milk) (14.5, 12.8, and 11.7 months, respectively), $F(2,434) = 1.77, ns$. French mothers think that breastfeeding could ideally be terminated at a much younger age than mothers in the other two countries, although it was not the case for formula feeding.

Percentages of breastfeeding mothers

The percentages of breastfeeding mothers, including exclusive breastfeeding and mixed feeding, were calculated from the questionnaire data at each age in months (Figure 1). Data for the first 4 months were obtained from all samples. For infants over 4 months, only data from infants having at least that age were used. Thus, the data for older ages are based on smaller samples.

Initially, most of the Japanese and the American mothers chose breastfeeding, and the percentages gradually decreased over 15 months. The percentages were smaller for the French mothers, and their decrease was much more apparent. Japanese and American mothers were more like each other. χ^2 analyses indicate that breastfeeder ratios were not significantly different across countries at 1 month of age, but after this point French mothers were consistently less likely to breastfeed at 2 months, $\chi^2(2, N = 1280) = 112.05, p < .0001$, and thereafter. The mothers in all three countries actually stopped breastfeeding much earlier (6.15, 4.58, and 7.46 months in average for Japanese, French, and American samples, respectively) than their reported ideal time (11.71, 7.27, and 11.42 months).

Evaluation of breast milk/formula and their own child-rearing

Factor analysis (principal factor method with Varimax rotation) was applied for the responses about the evaluation of breast milk and formula (Table 2), and two factors were obtained: Factor 1, interpreted as 'breast milk advantage' (mothers with high scores felt breast milk was advantageous), and Factor 2 as 'formula advantage'.

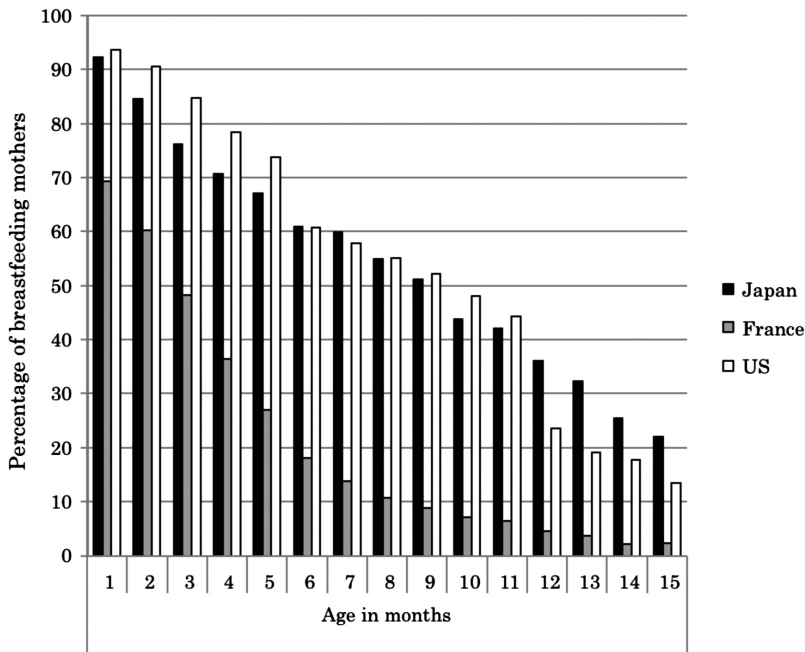


Figure 1. Percentage of mothers breastfeeding (exclusively or mixed with formula feeding) at each age. Data for the first 4 months were obtained from all samples, and for infants over 4 months, only data from infants at least that age were used.

Average rating scores for the 11 items loading highly on ‘breast milk advantage’ were 4.4, 4.4, and 4.7 for Japan, France, and the US, respectively, $F(2,1184) = 18.26$, $p < 0.001$; and for the 10 items for ‘formula advantage’ were 3.3, 3.5, and 3.4, respectively, $F(2,1126) = 5.34$, $p < 0.01$. Generally, mothers of the three countries thus had the overall positive image for breast milk, especially the American mothers. Concerning formula, French mothers evaluated it more positively than Japanese and American mothers.

Mothers’ perception about their own child-care was compared among the three countries. The results of Fisher’s *LSD* for the significantly different items among them are summarised in Table 3. The Japanese mothers showed more negative perceptions toward their own child-care experience than mothers in the US and France. It is also noteworthy that French mothers felt their child-rearing more burdensome.

Reasons for terminating breastfeeding

The mothers were asked to pick the most important reason for their decision to terminate breastfeeding out of 26 possible choices. Table 4 shows the percentages of mothers choosing each reason as the most important in their decision to terminate breastfeeding. The data are compiled in every 4 months (1–4, 5–8, and 9–12 months) because the dominant reasons could be different according to the weaning periods, and the items are arranged in order of the importance during the initial 4 months for the Japanese mothers.

The reasons given for the cessation of breastfeeding were quite similar across the three countries with some idiosyncrasy. Perceived insufficiency of breast milk was

Table 2. Factor analysis for responses of mothers of three countries about evaluation of breastfeeding and formula feeding.

	Factor	
	1	2
Factor of 'Breast-milk advantage' (Cronbach alpha = .879)		
Good for child's health (Breast milk)	0.731	
Good for mother/child relationship (Breast milk)	0.705	
Good for child's nutrition (Breast milk)	0.683	
Good for child's motor development (Breast milk)	0.654	
Tasty for child (Breast milk)	0.647	
Safe for child (Breast milk)	0.636	
Sanitary (Breast milk)	0.632	
Economical (Breast milk)	0.604	
Good for child's intelligence (Breast milk)	0.620	
Good for mother's health (Breast milk)	0.596	
Convenient (Breast milk)	0.572	
Factor of 'formula advantage' (Cronbach alpha = .844)		
Good for child's health (Formula)		0.726
Good for child's motor development (Formula)		0.685
Safe for child (Formula)		0.639
Good for mother/child relationship (Formula)		0.626
Sanitary (Formula)		0.627
Good for child's intelligence (Formula)		0.587
Tasty for child (Formula)		0.557
Good for child's nutrition (Formula)		0.566
Good for mother's health (Formula)		0.540
Convenient (Formula)		0.483
Cumulative percent of variance	23.31	41.60

Table 3. Mothers' perception about their own child-care.

Fisher's <i>LSD</i>	Mean of 4-point rating scores			Items
	Japan	France	US	
Japan > France > US	2.11	1.85	1.64	I feel as if I were separate from the world because of child-rearing responsibilities.
	2.11	1.79	1.29	I doubt my suitability as a mother.
Japan > France = US	3.26	3.03	2.97	My child and I are equal as persons.
	1.18	1.05	1.02	I wish I had not had a child.
US > France > Japan	3.21	3.34	3.66	I try to meet my child's demands.
France = US > Japan	3.56	3.90	3.95	I like being a mother.
	2.62	2.98	2.94	The child's happiness depends on the mother.
	2.50	2.62	2.69	It is because the mother loves the child that she disciplines him/her strictly.
(US > France) = Japan	3.04	2.94	3.17	I feel my life worth living because of my motherhood.
France > Japan > US	1.93	3.12	1.65	It is burdensome to raise a child.

>, significantly different; =, n.s.

the major reason for stopping breastfeeding, being particularly so for the Japanese mothers in the earlier stages (50.6% and 44.4% during 1–4 and 5–8 months, whereas the values were between 10.5% and 30.4% for the other two countries). This difference was still significant when limited to the mothers of the three countries leaving home for more than 5 h a week for work or study, $\chi^2(2, N = 486) = 13.90$, $p = .001$. Thus it was not because of difference in the number of working mothers.

French mothers were unique in high percentage selecting '*Back to work*' as the top reason for stopping breastfeeding (22.3%, 39.4%, and 21.2% for 3 stages), followed by American mothers, and Japanese mothers were least likely to make this choice at the earlier months (7.6%, 8.3%, and 13.5%). Relatively more French and American mothers chose '*Fatigue*' of breastfeeding as the important reason in the period of 1–4 months (10.2% and 13.3%, respectively, vs. 2.4% for Japan), and '*Age of child*' during 9–12 months (30.3% and 32.1%, respectively, vs. 13.5% for Japan). On the other hand, '*Children's refusal or disinterest*' is an item depicting child-driven weaning, and was chosen by Japanese and American mothers particularly during 9–12 months (18.9% and 28.6%, respectively, vs. 3.0% for France).

'*Advice of own mother*' is more important for French and Japanese mothers, whereas no American mothers chose it as the most important reason. The advice of the doctor and the child's father were generally not very important (1.5% or less), particularly so for the Japanese and American mothers.

Perceived insufficiency of breast milk

Mothers were classified into two groups: those mentioning '*insufficiency*' as the most important reason for weaning ('*insufficient*' group) and not ('*other*' group).

Scores for the above-mentioned advantages of breast milk and formula were compared between the '*insufficient*' group and '*other*' group for each country (Figure 2). Only in Japan did the mothers in the '*insufficient*' group evaluate formula as being significantly more positive than '*other*' group, $F(1,146) = 15.69$, $p > .001$. American '*insufficient*' mothers tended to evaluate breast milk less positively.

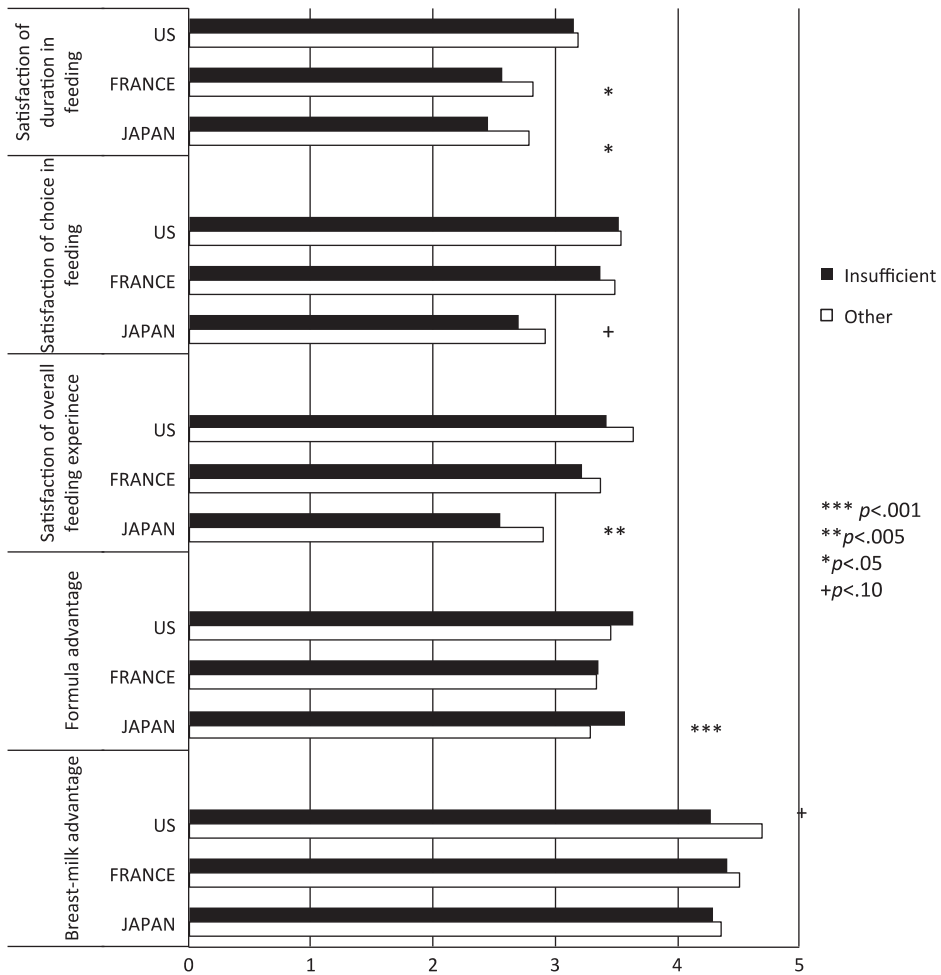
In Japan, satisfaction with the feeding experience was smaller in the '*insufficient*' mothers than the '*other*' mothers, $F(1,159) = 8.65$, $p > .005$. The French '*insufficient*' mothers were less satisfied with the duration of feeding than the '*other*' mothers, $F(1,476) = 5.28$, $p > .05$. Thus the reason of '*insufficiency*' for stopping breastfeeding was strongly linked with the mothers' perception of breast milk and formula.

The Japanese '*insufficient*' mothers were more likely to have received a sample of formula at the hospital ($p < .05$, exact test), and thought an ideal length of exclusive breastfeeding to be significantly shorter than the mothers with other reasons (7.1 vs. 10.2 months), $F(1,131) = 13.73$, $p < .001$, but such a difference was not found between '*insufficient*' and '*other*' mothers in the other two countries.

Discussion

The aim of this study was to examine cross-culturally the relation between feeding and weaning practices and its reasons, mother's perception of breast milk and formula, and her feeling of child caring. Our data from Japan, France and the US have revealed some similarities and differences.

Generally, mothers positively evaluated breastfeeding. Breastfeeding was considered as a way to strengthen the health of children and bonding between



Average scores of the 4 (for satisfaction) or 5 (for advantage) point rating scales

Figure 2. Characteristics of mothers who mentioned insufficiency as the most important reason.

mother and infant. Breastfeeding has been more and more encouraged in Japan (Health Policy Bureau, 2007), France (ANAES, 2002; Comité de Nutrition de la Société française de pédiatrie., 2005), and the US (Frerichs et al., 2006). However, breastfeeding also brings constraints to mothers (Jodelet & Ohana, 2000; McDade, 2000). In our study, the mothers of three countries switched to formula- and/or solid-feeding sooner than their reported ideal age. The gap might be a way for mothers to emancipate themselves from the constraint of breastfeeding, but it also could be a cause of mothers’ feelings of failure or frustration about the choice.

Initially most of the Japanese and the American mothers chose breastfeeding, and the percentages gradually decreased over 1 year (92.26% and 93.69% at 1 month, 60.97% and 60.82% at 6 months, and 36.00% and 23.56% at 12 months for Japan and the US, respectively). National statistics in 2005 show a similar trend in Japan (96.6% at 0 month and 60.6% at 6 months; Health Policy Bureau, 2007), but

in the US the figures were a little lower in 2005–2007 (83.3%, 50.1%, and 25.9% at 0, 6, and 12 months, respectively; Grummer-Strawn, Scanlon, & Fein, 2008).

The percentage of breastfeeders was lower for the French mothers, and their decrease in the rate of breastfeeding was more rapid (69.25%, 18.05%, and 4.62% for 1, 6, and 12 months), which is in concordance with other French data (Branger, Cebbron, Picherot, & de Cornulier, 1998; Walburg, Goelich, Conquet, Callahan, Chabrol, & Schömelrich, 2007b; Walburg, Conquet, & Callahan, 2009).

Weaning and perceived insufficiency of breast milk

The perceived insufficiency of breast milk was significantly linked with the cessation of breastfeeding in the three countries, but the structures of the judgement were substantially different among the three cultures. Japanese mothers were prominent in choosing '*insufficiency*' as the reason for terminating breastfeeding. The Japanese mothers in the present study were characterised by their stronger inclination to breastfeed infants and by the negative perception of their own motherhood, and the Japanese '*insufficient*' mothers evaluated formula feeding more positively than the other Japanese mothers. The Japanese mothers mentioning insufficiency as the top reason for discontinuing breastfeeding were also those with less satisfaction with their choice of feeding practice than the other mothers. These Japanese '*insufficient*' mothers tended to receive a sample of formula from the hospital more frequently than the other mothers. Japanese mothers are often advised to add formula when breast milk is insufficient (Nagayama, 1998). Japanese mothers are generally obedient to their doctors' advice, and the medical staff often recommend formula to mothers in the hospital during maternal stay to give them a rest. These could have reduced the barrier to use formula as well as the actual supply of breast milk. Therefore, the Japanese '*insufficient*' mothers may have become less motivated to continue breastfeeding. The present results suggest that the Japanese mothers perceive formula as a supplement to breast milk rather than as substitute. That may have made the transition from breast milk to formula easier. Additionally, the gift of formula at hospital discharge might have somewhat affected mothers' choices (Bergevin, Dougherty, & Kramer, 1983).

Introduction of formula and breastfeeding duration

These suggest that mothers' beliefs and attitudes about child-rearing could lead them to use formula feedings, and its introduction could be a *cause*, rather than an outcome, of the insufficiency of breast milk, although it might not be the case in the early period (Hillervik-Lindquist, 1992).

Japanese mothers have a higher percentage of mixed (breast and formula) feeding from the beginning (41.3%, vs. 8.6% and 5.9% in the US and France, respectively, in our sample), which is quite similar to recent national statistics of three countries: 48.6% at 2005 in Japan (Japanese Ministry of Health, Labour and Welfare, 2007); 6.3% at 2003 in France (Blondel, Supernant, Mazaubrun, & Bréart, 2005).

Breast milk production and breastfeeding duration are related to the frequency of infant sucking (Lawrence & Lawrence, 2005; WHO, 1981); consequently, the introduction of formula reduces nipple stimulation and hence could cause a decrease in the production of breast milk.

National recommendation and informational support

Matich and Sims (1992) discussed social support variables of breastfeeding in the US and concluded that informational support is most important. In the US, the 'Healthy People 2010' guidelines in effect at the time of this study set explicit national goals for increasing the percentage of breastfeeding mothers. The American Academy of Pediatrics (national association of paediatricians) recommended breastfeeding for more than 12 months (American Academy of Pediatrics, 2011). In the American data, the percentage of breastfeeding mothers decreased gradually, and 45% of American mothers were continuing to breastfeed at 11 months. Then it decreased suddenly to 23% at 12 months, which could be interpreted as American mothers' efforts to maintain breastfeeding until 12 months, the age indicated in the recommendations.

In Japan, the Ministry of Health, Labour and Welfare issues a nationwide guideline to every local health centre in order to frame the practices of breastfeeding and weaning. The Japanese mothers' practice in the present study was generally much shorter than the recommendation of weaning (12–15 months) at the time of this study (Health Policy Bureau, 2007). At 12 months, 36% of Japanese mothers were breastfeeding in our data. This might partly have reflected the shorter period indicated in the previous governmental guideline. However, this rate is still higher than the other two countries.

In France, only the recommendation of WHO (2001) and UNICEF (2010) for exclusive breastfeeding up to 6 months is mentioned, and no other indications for the duration of breastfeeding has been found in official reports or texts by Ministère du Travail, de l'Emploi et de la Santé. This could explain our results in which the majority of French mothers answered around 6 months as the ideal breastfeeding duration. Only 18% of French mothers in our data are breastfeeding at 6 months.

In Japan, mothers are advised by medical staff at periodical medical check-up on the basis of the above-mentioned guideline. Those informational supports would help mothers to choose their care practice, but also could produce difficulty when the advice conflicts with the mothers' own desire and physical condition.

Cultural value and social condition of women

Japanese mothers are unique in their extended absence from their workplace until their infants reach 3 years or more (so-called 'M-shaped labour force curve'; Mothers' and Children's Health & Welfare Association, 1997). Despite many improvements of women's working conditions in Japan, little increase in the percentage of mothers choosing to go back to work after maternal leave has been reported (Ministry of Health, Labour & Welfare, 2010). The idea to stay at home to care for their child before school age (around 3–6 years), the so-called 'Myth of 3-year-sensitivity' (Ohinata, 2000), stays dominant among Japanese mothers. 'Myth of 3-year-sensitivity' is similar to the 'Bonding myth' (Eyer 1993) extended to 3 postpartum years. As Ohinata (2000) pointed out, in Japanese society the maternal role in infant care is strongly accentuated and breastfeeding success is one of the big pressures for Japanese mothers. Under this pressure, perceived insufficiency of breast milk could be a good excuse to solve the dilemma of the responsibility of longer feeding and the desire for emancipation from the burden by its earlier cessation.

French mothers tended to choose the type of feeding more in relation to their own condition or feelings, as shown by a dominant reason of '*My preference*' to

choose breastfeeding (Norimatsu, Bouville, Negayama, & Barratt, 2004), and the reasons such as '*Back to work*' or '*Fatigue*' for the introduction of formula and/or solids in the present study. Other French studies reported the reason to choose formula feeding as being to avoid an exclusive dependency of their infant or for the participation of father in feeding the infant (Jodelet & Ohana, 2000; Walburg, Goelich, Conquet, Callahan, Schömelrich, & Chabrol, 2007a). French mothers had a stronger tendency to choose breastfeeding for its advantage for themselves and formula feeding for the fear of excessive mother–infant dependency and for avoidance of burden of mothering linked to breastfeeding (Chabrol, Walburg, Teissedre, Armitage, & Santrisse, 2004). This is quite different from the Japanese and American mothers' attitudes toward children as well as the mother–child relationship.

Reasons for weaning

Mothers' prenatal plans and their confidence about the duration of breastfeeding have been found to be significant predictors of time to stop breastfeeding (Buxton, Gielen, Faden, Brown, Paige, & Chwalow, 1991; Hillervik-Lindquist, 1992). Mothers who decided the type of feeding before pregnancy were more likely to breastfeed their infants (Cronenwett et al., 1992), or to do so for a longer period in France (Branger et al., 1998, Jodelet & Ohana, 2000; Walburg et al., 2007a). In the present result, '*Back to work*' was one of the most frequently cited reason for stopping breastfeeding among French mothers, especially for the period of 5–8 months. It could be due to the large percentage of working mothers in France compared to US and Japanese mothers in the present sample as in the general statistics of the three countries. In other French surveys, '*insufficiency of breast milk*' and '*breast-feeding difficulties*' have been reported as the main reasons for weaning before 3 months (Charpentreau, 2004; Visness & Kennedy, 1997), and our data have shown a similar result for the period of 1–4 months; '*insufficiency of breast milk*' (23.5%) at the first position as the reason for weaning, followed by '*back to work*' (22%), '*fatigue*' (10%) and '*discomfort or pain of breastfeeding*' (8%).

Cultural differences in child-care

Bornstein et al. (1992) compared maternal responsiveness to infant activity in the home in the US, France and Japan. Japanese mothers were different from the other mothers with respect to their stronger responsiveness to the infants, and their responsiveness was more dyadic than extradyadic, with a stronger connection between them. The French mothers were the least responsive dyadically as well as extradyadically. Thus the French mothers were characterised as the least child-centred among the three countries.

Raphael-Leff (1983) described two major types of mothering, i.e. 'regulator (mother-centred)' and 'facilitator (child-centred)'. From our data on childrearing attitudes and feeding, French mothering would be characterised more as regulator-type, whereas Japanese and American mothering might be characterised as a facilitator-type. Suizzo (2004) compared child-rearing beliefs between French and American mothers and drew the conclusion that the American mothers attributed more importance to practices associated with emotional closeness and responsiveness to infants, whereas the French mothers to fostering autonomy and individuality from a very young age.

In other words, the Japanese and the American mothers chose their feeding practice by taking into account more of the child-related factors. Mothers' choice of time and way of weaning may reflect a power relationship between mother and child, and hence reflect the characteristics of mother-child relationship in the culture.

Conclusion

Feeding and weaning are an important biological framework for child care. In the present research, we aimed to explore cultural differences in the feeding and weaning practices across the three industrialised countries of Japan, France and the US, and considered the impact of cultural values, social systems, and psychological factors on the feeding practices. Previous studies on feeding practice have been focused on sociodemographic data and medical conditions rather than examining the influence of cultural and social value on feeding (Hernandez & Callahan, 2008). Our study revealed that, even in these industrialised countries, the practices of feeding and weaning are different due to differences in the role of women in the society, official recommendations, and mothers' perception of their children and their own responsibility for the care. Infant weaning is strongly connected with the infant-mother mutual autonomy, and how the mother feeds and weans her infant is important for the mother. These choices may be related to the allocation of her own resources, as shown in the perceived insufficiency of breast milk in the present study.

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