

## Associations of Psychosocial Factors with Maternal Confidence Among Japanese and Vietnamese Mothers

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**Abstract** We conducted this cross-sectional study among 392 Japanese and 294 Vietnamese mothers who attended routine child health visits in a Japanese city and at a tertiary hospital in Vietnam, in order to investigate the prevalence and associated sociodemographic, parenting, and psychological characteristics of low maternal confidence in child rearing among them. All data were collected from medical files in Japan, and from medical files and self-administered questionnaires in Vietnam. The proportion of mothers without secure feeling of confidence in the present study was 22% in Japan and 66% in Vietnam. Significant factors associated with a lack of confidence were first-time motherhood and unintended pregnancy in the Japanese dataset and younger age in the Vietnamese dataset. In both groups, a higher proportion of mothers who lacked confidence reported negative parenting outcomes than did

confident mothers. Among the three psychological measurements (mood, self-efficacy and depression), higher self-efficacy was associated independently with a significantly reduced risk of not having confidence in child rearing. These results suggest the importance of developing parenting support programs to help Japanese and Vietnamese mothers, particularly those who are young, first-time mothers or who became pregnant unexpectedly, improve their self-efficacy.

**Keywords** Child rearing · Japan · Vietnam · Maternal confidence · Self-efficacy

### Introduction

Parents, especially mothers, are the primary gatekeepers of their children's health. It is widely acknowledged in developed and developing countries that maternal health heavily impacts children's health (Patel et al. 2004). The multiple roles that women fulfill as wives, mothers, caretakers, and workers expose them to greater risk of experiencing mental health disturbance. Among reproductive age women, depression produces the highest burden of disease globally (Thara and Patel 2001). There is evidence to suggest that mothers' psychosocial and mental health have significant effects on child growth, nutritional status, and emotional development (Barlow and Coren 2004; Harpham et al. 2005; Patel et al. 2004; Poobalan et al. 2007).

In Asia, fathers' involvement in child rearing tends to be much less than mothers compared to that in Western regions. An international survey reported that time (per day) spent with children under 3 years old was 7 h longer for mothers than for fathers in Japan and Korea. By comparison, this difference was approximately 4, 3 and 2 h in

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the US, France and Sweden, respectively (National Women's Education Center, Japan 2006). Reflecting the excess burden of child rearing among Japanese mothers, Japanese mothers rate themselves as less competent and are also less satisfied with their parenting abilities (Bornstein and Cote 2004). Additionally, they also experienced the greatest role conflicts and had the poorest mental health (Chandola et al. 2004).

In developing countries, maternal mental health is also increasingly recognized as a major determinant of overall family health, although research in the field still calls for further attentions (Patel et al. 2004; Thara and Patel 2001). In Vietnam, there is little published evidence about mental health problems in general (Harpham and Tuan 2006). Recent studies indicate that the prevalence of postpartum depression may be considerably high (33% among mothers of infants aged around 6 weeks) (Fisher et al. 2004), and that poor maternal health is associated with poor child nutritional status (Harpham et al. 2005).

Maternal confidence is defined as a mother's perception of her ability to care for and understand her children (Badr 2005). It is an important factor in fostering healthy parenthood and positive mother-child relationships, and it often forms part of evaluations of parent-training programs (Badr 2005; Barlow and Coren 2004). Recent studies in Japan have demonstrated that maternal confidence is an important determinant of anxiety and stress associated with child rearing (Maruyama et al. 2006; Watanabe and Hoshi 2004), and it is an indicator in the evaluation of the Japanese government's maternal and child health plan. In our previous study, the first epidemiologic study to explore the issue in both developed and developing regions in Asia, we found that as high as 48% of Japanese and 63% of Vietnamese mothers were not confident in child rearing at one-month postpartum (Goto et al. 2008). The study was limited, however, by a small sample size, and used only the conventional one-question assessment of maternal confidence. The present study aimed to deepen our understanding of maternal confidence in both countries and expand upon those initial findings by including additional psychological indicators with a larger sample size. Specifically, we examined how maternal confidence was associated with temporal mood, psychological depression and general self-efficacy.

## Methods

We selected the two countries based on both reproductive health and operational stand points. Japan and Vietnam share several common characteristics regarding reproductive health (Goto 2006). For instance, both countries have limited preference for contraceptive methods among

couples (condom in Japan and intrauterine device in Vietnam). Abortions are widely practiced and socially accepted in both countries, and the proportion of unintended pregnancies among live births is similar (~20%). Based on these similarities and our academic partnership since 2002 (Goto et al. 2007), we conducted a prospective study of pregnant women in both countries to examine influences of reproductive health (including pregnancy intention) and socio-demographic factors on child rearing during very early stages of parenthood. The present study stemmed from the major finding mentioned above (Goto et al. 2008); namely, a high proportion of mothers who lack confidence in child rearing in both countries.

The survey in Japan targeted all mothers who attended 3–4 months routine child health visits at a city health center in Sukagawa City, Fukushima, from May to December 2007. Sukagawa City is a developed commercial city with the fifth largest population (80,324 in 2007) in Fukushima Prefecture. According to city statistics, the number of live births was 730 in 2006 and attendance rate for the 3–4 months routine child health visit was 96% in 2007. These child health visits function not only to assess children's physical health, but also to evaluate maternal health and provide appropriate counseling to mothers. In Japan, mothers are required to report their pregnancies to a municipal office, which maintains children's health files. The present survey reviewed these files to collect the following information: mother's socio-demographic characteristics, pregnancy and medical history, mental health assessments and parenting conditions. For the child, birth history, early infancy medical history, and the results of health visits were also examined.

The survey in Vietnam was conducted at a single hospital, and targeted mothers attending child health visits at Tu Du Obstetrical and Gynecological Hospital from October to December 2007. This hospital is affiliated with the University of Medicine and Pharmacy in Ho Chi Minh City, and serves as a referral hospital for 32 provinces in the south of Vietnam. According to hospital statistics, the number of live births in 2005 was 45,022. In Ho Chi Minh City, children attend monthly routine health visits until the third month at the hospital where they were born. Those children with abnormal findings remain at the hospital and others are referred to local health centers to be followed through their twelfth month. As such, ages of Vietnamese babies included in the survey varied from 1 to 3 months, whereas those of Japanese babies ranged from 3 to 4 months. In order to ensure accuracy in data collection, enrolled mothers were clients of one assigned pediatrician at Tu Du Obstetrical and Gynecological Hospital. The pediatrician had received training on routine well-child health examinations and data collection prior to the survey, and other Vietnamese doctors in the research team had also

participated in research training conducted jointly by their university and the Department of Public Health of Fukushima Medical University School of Medicine (Goto et al. 2007). The same survey items as in the Japanese survey were collected using questionnaires filled by mothers and the assigned pediatrician.

There were four components in the questionnaires to assess mother's parenting and mental status: parenting indicators, mood, self-efficacy, and depression. The parenting indicators were included in the National Child Health Survey in Japan and are used to evaluate some of the goals in the national maternal and child health plan (Ministry of Health, Labour and Welfare, The 21st Century Sukoyaka Family Working Group 2000). It assessed the mother's subjective feelings towards child rearing and her evaluation of her partner's participation in child rearing, including the question on maternal confidence: "Are there any moments when you don't feel confident about child rearing?" Those subjects who answered yes or were unsure of their response were classified as lacking confidence in child rearing. In addition to the four parenting indicators, we asked whether a mother had any additional concerns pertaining to parenting or to her family, a question which is routinely asked at child health visits in Japan.

We selected three psychological indicators according to Takamura's (2007) manual of health education programs. These were used in a health education training course organized by the Japan Family Planning Association, in which public health nurses of Sukagawa city had participated prior to the survey. The mother's mood was assessed by a pictorial scale with a sequence of 20 faces. They are arranged in decreasing order of mood and numbered from 1 to 20, with 1 representing the most positive mood and 20 representing the most negative mood. The scale was devised by Lorish and Maisiak (1986) as a means to estimate overall quality of life in arthritis patients. It has proven to correlate well with other mental health measurements and to be sensitive to changes in patients' responses to treatment. Moreover, the scale is utilized in evaluations of parenting support activities in Japan (Takamura 2007).

Because of their simplicity and applicability, and because other routine parenting assessment tools were unavailable in Vietnam, the same tools were used to assess the above two items. In contrast, different tools were utilized to assess mother's self-efficacy and depression. The survey in Japan used the General Self-Efficacy Scale (GSES), which was developed by Sakano and Tohjoh (1986) to measure a person's strength of general perceived self-efficacy among the Japanese population. The GSES consists of 16 statements regarding one's optimism, anxiety about failure and social position. Negative and positive answers are scored 0 and 1, respectively, and the total score

ranges from 0 to 16, with a higher score indicating stronger self-efficacy. The normal range among women is 8–10 (Sakano 1989). In Vietnam, the General Perceived Self-Efficacy (GSE) scale developed by Schwarzer and Jerusalem (2005) was used. Although the scale was adopted in 14 cultures, the Vietnamese version was not available. We thus translated its English version into Vietnamese, which was then back-translated into English to confirm accuracy. The scale consists of 10 questions similar to the Japanese GSES with four response categories; "not at all true" (1), "hardly true" (2), "moderately true" (3), and "exactly true" (4). The total score ranges from 10 to 40 and higher scores indicate stronger self-efficacy.

Depression among Japanese mothers was measured using the Japanese version of the Edinburgh Postnatal Depression Scale (Okano et al. 1996), a ten-item instrument widely used in regional public health programs in Japan (Nishizono-Maher et al. 2004). Each item is scored on a four-point scale from 0 to 3, and the total score ranges from 0 to 30. In Western populations, a score of 13 or higher is regarded as indicative of postnatal depression, but among Japanese women, a score of 9 or higher is established as the cut-off point (Okano et al. 1996). In the Vietnamese survey, a two-question case-finding instrument (Whooley et al. 1997) was used to assess depression. The assessment of maternal mental health is a relatively new concept in Vietnam. Thus, we conducted a separate survey for this research, whereas in Japan, we reviewed the results of forms collected during the course of the routine child health visits. Additionally, we were required to shorten the Vietnamese questionnaire and used a shorter depression tool to improve the study's acceptance among mothers and hospital staff. The depression tool includes two questions about depressed mood and anhedonia: "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" and "During the past month, have you often been bothered by little interest or pleasure in doing things?" Answering "yes" to one of these two questions is indicative of depression, and the tool is proven to have similar test characteristics as other more time-consuming depressions assessments (Whooley et al. 1997). Like the GSE, the English version was translated into Vietnamese and then back-translated into English to confirm its accuracy.

Survey data were analyzed using STATA statistical software, version 8 (Stata Corporation, College Station, TX). To analyze the associations between maternal confidence and parenting indicators, Chi-square test or Fisher's exact test was used. For the analysis of factors associated with maternal confidence, logistic regression was performed against the following characteristics. Maternal characteristics included age (dichotomized by the median), employment (working or not), previous birth

(first-time mother or not), medical history (yes or no), current health condition (good or poor) and pregnancy intention (intended or unintended). Marital status at the time of pregnancy registration (married or single) was recorded only among Japanese mothers, and educational level (high school or lower vs. vocational school, university or higher) was assessed among Vietnamese mothers. Household characteristics included recent change of address (yes or no), financial difficulty (yes or no) and living status in relation to grandparents (yes or no). Child characteristics included sex (male or female), age in months, birth weight (under 2,500 g or higher), and routine health visit findings (yes or no). Maternal education was not included in the Japanese survey because the question, which was considered highly sensitive culturally, was not available in the health visit forms. Marital status at the time of pregnancy registration was included in the Japanese survey due to a considerable recent increase in premarital conception (Goto et al. 2006).

Associations of maternal confidence with mental health measurements were analyzed using logistic regression analyses. Model 1 was a univariate analysis entering each mental health measure as an independent variable. The dependent variable was maternal confidence (confident = 0, not confident = 1). Independent variables were mood, self-efficacy, and depression. Mood and self-efficacy were entered as discrete variables and depression as a bivariate variable. Model 2 included maternal background characteristics that remained significant in the previous analyses. For the Japanese dataset, these comprised previous birth (first-time mother or not) and pregnancy intention (intended or unintended), and for the Vietnamese dataset, only mother's age (dichotomized by median) was significant. Model 3 entered mental health measurements that were significant in Model 2 with the background factors.

The Japanese survey was conducted as part of Sukagawa City's public health activities with an approval from the city health center. The Vietnamese survey was approved by the Science and Ethical Board and the hospital director of Tu Du Obstetrical and Gynecological Hospital. The study was explained to all the women, and oral consent was obtained from all participants.

## Results

In the Japanese survey, data were collected from 403 mothers. Five mothers whose pregnancy registration forms were filled by persons other than the mothers themselves were eliminated from the analysis of basic maternal characteristics as shown in Table 1. Additionally, six who had twins and thirty who did not give answers to the maternal

confidence question were not included in subsequent analyses. In the Vietnamese survey, one out of the 300 mothers approached refused to participate and was not included in Table 1. Additionally, five mothers with twins and one mother missing maternal confidence data were eliminated from analyses. Characteristics of the 398 Japanese and 299 Vietnamese participants are shown in Table 1. Median maternal age was 29 years old in Japan and 30 years old in Vietnam. Due to a methodological difference, there was a distinct difference in median age of children; 4 months in Japan and 1 month in Vietnam. Proportion of unintended pregnancies was 21 and 10%, and that of first-time mothers was 49 and 56% in Japan and Vietnam, respectively. Among Vietnamese mothers, 43% had an education level higher than high school.

The number of mothers who lacked confidence in child rearing was 86 out of 392 Japanese mothers [22%, 95% confidence interval (CI) 18–26%] and 193 out of 294 Vietnamese mothers (66%, 95% CI 60–71%). Among Japanese mothers, being a first-time mother, having an unintended pregnancy, being unmarried at the time of pregnancy registration, and reporting a change of address during pregnancy were significantly more prevalent in the group lacking confidence in child rearing, and the first two factors remained significant in the multivariate analysis (Table 2). Among Vietnamese mothers, younger age, being a first-time mother and having achieved higher educational levels were significantly more frequent in the group lacking confidence in the univariate analyses; age remained significant in the multivariate analysis.

Table 3 shows associations of maternal confidence with parenting in two countries. Japanese mothers in the group lacking confidence were significantly less likely to be satisfied with fathers' participation in child rearing (87% among women with confidence versus 71% among those without) and to have someone to talk with about child rearing (100, 96%). Vietnamese mothers lacking confidence were more likely to feel that they were abusing their children, although this reached only borderline significance (5, 12%). In both countries, mothers who lacked confidence were significantly more likely to report parenting or family concerns than mothers with confidence (Japan: 30, 59%, Vietnam: 38, 61%).

While all three mental health measurements were significantly associated with maternal confidence in the univariate analyses in Japan, only self-efficacy [Odds ratio (OR) 0.91, 95% CI 0.84–0.99] remained significant in the final model (Table 4). Also among Vietnamese women, self-efficacy (OR 0.90, 95% CI 0.86–0.95) was the only factor that remained significant in the multivariate analysis. The OR for self-efficacy indicates a reduction in risk of lacking maternal confidence per unit increase in self-efficacy.

**Table 1** Characteristics of participating Japanese and Vietnamese women and their children

	<i>N (%)<sup>a</sup> or Median (min, max)</i>	
	Japan <i>N</i> = 398	Vietnam <i>N</i> = 299
<i>Maternal socio-demographic characteristics</i>		
Age (years)	29 (17, 44)	30 (19, 48)
Employment		
Employed	153 (43)	238 (80)
Not employed	201 (57)	61 (20)
Financial difficulty		
Yes	5 (1)	19 (6)
No	393 (99)	280 (94)
Education		
High school or lower	–	170 (57)
Vocational school, university or higher	–	129 (43)
<i>Maternal pregnancy and medical history</i>		
Previous birth		
0 (first-time mother)	194 (49)	166 (56)
1 or more	202 (51)	133 (44)
Medical history		
Yes	35 (10)	41 (14)
No	304 (90)	258 (86)
Pregnancy intention		
Intended	267 (79)	269 (90)
Unintended	71 (21)	30 (10)
<i>Child characteristics</i>		
Age (months)	4 (2, 6)	1 (1, 3)
Birth weight		
Less than 2,500 g	26 (7)	19 (6)
2,500 g or higher	372 (93)	280 (94)
Number of fetuses		
Twins	6 (2)	5 (2)
Singletons	392 (98)	294 (98)

<sup>a</sup> Totals across columns for some items do not add up to the total number indicated in the top row because of missing data

## Discussion

The maternal confidence question is a highly useful tool to assess parenting quality, and has been used as an indicator in the Japanese government's national health plan. First, the present study and a previous study (Goto et al. 2008) reveal that, primarily due to its simplicity, this question has high acceptability in actual service settings both in Japan and Vietnam. Second, the cross-validity of the question was roughly confirmed in both countries by comparing the present results with data from a previous study of ours (Goto et al. 2008). Third, family characteristics associated with maternal confidence in

Vietnamese and Japanese mothers in the present study were plausible and consistent with data from our previous study (Goto et al. 2008). Fourth, the maternal confidence question as a parenting quality tool showed strong associations with other parenting and psychological indicators included in the present study. However, we observed an extremely high proportion of Vietnamese mothers who reported low confidence in child rearing when “not sure” answers were included, compared to that of Japanese mothers in our surveys. Moreover, a fewer number of significant associations were revealed for various parenting and psychological indicators in Vietnamese mothers compared to Japanese mothers, which suggests that further investigation may be necessary regarding the usefulness of this method as a screening tool in Vietnam. Each of the above points is discussed in detail below.

As in our previous report (Goto et al. 2008), the proportion of mothers who reported not feeling confident in child rearing was high in Vietnam (66%). The prevalence of mothers who admitted a lack of confidence (= who answered “yes”) in Japan in the present study (7%) was comparable to the above mentioned our previous data of 10% (Goto et al. 2008). The percentage of mothers who answered “not sure”, however, was much lower (17%) than it was in the previous study (37%). This difference was likely due to a major difference in the time at which we administered the survey. In the previous study, we mailed questionnaires to mothers at one month after delivery, when they were still trying to adjust to a new family environment. Despite the temporary reduction in the frequency of mothers answering “not sure” during the first few months after delivery, Japanese national data indicate that the total proportion of mothers lacking confidence rises subsequently (Ministry of Health, Labour and Welfare 2006). Understanding such trends among Vietnamese mothers requires further investigation.

According to the present study, Japanese mothers lacking confidence were more likely to be first-time mothers and to have conceived unexpectedly, which is consistent with our previous report (Goto et al. 2008). The fact that the univariate associations between single marital status and relocation during pregnancy and maternal confidence did not persist in the multivariate analysis is probably due to internal correlations with first-time motherhood. According to Japanese national statistics in 2004, the overall proportion of premarital conception (births within the first 8 months of marriage) was 13%, while the figure was 27% among first-born children (Statistics and Information Department, Minister's Secretariat, Ministry of Health, Labour and Welfare 2005). It is likely that first-time mothers will change their addresses when they form a new family. Among Vietnamese women in the present



**Table 2** Family characteristics associated with maternal confidence in child rearing among Japanese and Vietnamese mothers

	<i>N (%)<sup>a</sup></i>		Crude OR (95% CI) <sup>b</sup>	Adjusted OR (95% CI) <sup>c</sup>
	Confident <i>N</i> = 276	Not confident <i>N</i> = 86		
<b>Japan</b>				
<i>Maternal characteristics</i>				
Previous birth				
1 or more	165 (60)	20 (23)	1.00	1.00
0 (first-time mother)	111 (40)	66 (77)	4.91 (2.82–8.55)**	4.56 (2.35–8.83)**
Pregnancy intention				
Intended	198 (81)	45 (67)	1.00	1.00
Unintended	45 (19)	22 (33)	2.15 (1.18–3.94)*	2.39 (1.21–4.73)*
Marital status at time of pregnancy registration				
Married	221 (91)	56 (81)	1.00	1.00
Single	23 (9)	13 (19)	2.23 (1.06–4.68)*	1.18 (0.49–2.83)
<i>Household characteristics</i>				
Change of address during pregnancy				
No	250 (91)	68 (79)	1.00	1.00
Yes	26 (9)	18 (21)	2.55 (1.32–4.9)**	2.45 (0.79–7.58)
<i>Child characteristics</i>				
Health checkup findings				
No	238 (86)	67 (78)	1.00	1.00
Yes	38 (14)	19 (22)	1.78 (0.96–3.28) <sup>#</sup>	1.76 (0.84–3.70)
<b>Vietnam</b>				
<i>Maternal characteristics</i>				
Age (years)				
Median (30) or older	65 (65)	82 (42)	1.00	1.00
Less than median (30)	35 (35)	111 (58)	2.51 (1.52–4.15)**	1.95 (1.10–3.45)*
Previous birth				
1 or more	56 (56)	71 (37)	1.00	1.00
0 (first-time mother)	44 (44)	122 (63)	2.19 (1.34–3.57)**	1.53 (0.87–2.68)
Education				
High school or lower	66 (66)	104 (54)	1.00	1.00
Vocational school, university or higher	34 (34)	89 (46)	1.66 (1.01–2.74)*	1.44 (0.86–2.42)

OR odds ratio, CI confidence interval

<sup>#</sup> *p* < 0.1; \* *p* < 0.05;

\*\* *p* < 0.01

<sup>a</sup> Totals across columns for some items do not add up to the total number indicated in the top row because of missing data

<sup>b</sup> Univariate logistic regression analysis was used

<sup>c</sup> Items with a *p* value of less than 0.1 in the univariate analyses were entered into the multivariate analysis

study, first-time motherhood also showed significant association with maternal confidence in univariate analyses, as did maternal age and educational level. Age, however, emerged as the only significant factor in the multivariate analysis. This phenomenon, again, is likely explained by the internal correlations among the three factors. In Vietnam, educational attainment is increasing among younger women (Committee for Population, Family and Children [Vietnam] and ORC Macro 2003), and first-time births are naturally more likely to occur among younger women. The transition to parenthood is a significant life event for couples, which brings about numerous changes in family dynamics (Hakulinen and Paunonen 1995). First-time motherhood is thus typically associated with maternal confidence and anxiety levels (Akazawa et al. 1999; Tsuzuki and Kanagawa 2001). Our findings suggest that

first-time mothers, younger mothers, and mothers of unplanned pregnancies may suffer from a lack of confidence and may benefit from enhanced support.

In both countries, maternal confidence showed associations with the expected parenting indicators. Similarly, a brief report of Japanese Child Health Survey data in 2002 reported that mothers lacking confidence were more likely to feel they were abusing their children, have less free time with them, and report less support from their partners (Kawai et al. 2002). Not surprisingly, about 60% of Japanese and Vietnamese mothers lacking confidence according to the present study expressed concerns on child rearing or other family issues. This percentage was significantly higher than that among confident mothers. These results again indicate a need for providing sufficient support that responds to these mothers' parenting difficulties and concerns.

**Table 3** Associations between maternal confidence with parenting indicators among Japanese and Vietnamese mothers

	<i>N (%)<sup>a</sup> or Median (min, max)</i>							
	Japan				Vietnam			
	Total <i>N</i> = 392	Confident <i>N</i> = 276	Not confident <i>N</i> = 86	<i>p</i> value <sup>b</sup>	Total <i>N</i> = 294	Confident <i>N</i> = 100	Not confident <i>N</i> = 193	<i>p</i> value <sup>b</sup>
Feel I am abusing my child								
Yes or not sure	4 (1)	2 (1)	2 (2)	0.24	28 (10)	5 (5)	23 (12)	0.06
No	359 (99)	274 (99)	84 (98)		265 (90)	95 (95)	170 (88)	
Have time to interact with child in relaxed mood								
Yes	319 (88)	245 (89)	73 (85)	0.34	268 (91)	93 (93)	175 (91)	0.50
No or not sure	44 (12)	31 (11)	13 (15)		27 (9)	7 (7)	18 (9)	
Believe the child's father is cooperative in child rearing								
Yes	294 (83)	233 (87)	60 (71)	0.00	244 (83)	83 (83)	161 (83)	0.93
No or not sure	60 (17)	35 (13)	25 (29)		49 (17)	17 (17)	32 (17)	
Have someone to discuss about child rearing with								
Yes	386 (99)	276 (100)	82 (96)	0.01	249 (85)	82 (82)	167 (87)	0.30
No	4 (1)	0 (0)	3 (4)		45 (15)	18 (18)	26 (13)	
Have parenting or family concerns								
Yes	114 (36)	76 (30)	38 (59)	0.00	155 (53)	38 (38)	117 (61)	0.00
No	205 (64)	179 (41)	26 (41)		138 (47)	62 (62)	76 (39)	

<sup>a</sup> Totals across columns or rows for some items do not add up to the total number indicated in the top row or left column because of missing data

<sup>b</sup> Differences between the confident and non-confident groups were analyzed using Chi-square test or Fisher's exact test. There were 30 Japanese women and 1 Vietnamese woman who did not answer the question pertaining to maternal confidence

We further investigated maternal mental health. In datasets from both Japan and Vietnam, maternal confidence showed a strong and independent association with perceived self-efficacy. Albert Bandura (1999) defines self-efficacy as referring "to beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations". When raising children, parents are forced to face ever-changing needs and to manage interdependent relationships within their families and their society. Parents who believe in their capabilities to manage these challenges can be more competent with their children (Bandura 1999). Teti and Gelfand (1991) have suggested a mediating role of maternal self-efficacy, in which self-efficacy is associated with their behavioral competence independent of other psychosocial variables. Our study suggests a need to provide support to Japanese and Vietnamese mothers who lack confidence to help increase their self-efficacy. Achieving this is not a matter of adopting ready-made parenting suggestions from professionals. Rather, it requires mothers to acquire skills and beliefs in planning and executing appropriate courses of action to manage parenting challenges.

A systematic review of the literature has suggested that well-designed parenting programs can make a significant contribution to mothers' psychosocial health including self-efficacy (Barlow and Coren 2004; Sanders and Woolley 2005), but evidence from Asia is scarce. In recent

years, parenting programs that had been developed in Western countries have been introduced in Japan. Two of the actively promoted programs are the Positive Parenting Program (Triple P) from Australia (Kato 2006; Sanders et al. 2002) and the Nobody's Perfect program from Canada (Chislett and Kennett 2007; Harada 2007). The former is a multi-level community-oriented program based on social learning theory which aims to promote parental competence by introducing practical child management techniques. The latter is a group parenting program based on the concept of experiential learning, in which trained facilitators support participants as they work together to discover positive ways of parenting. Currently, we are developing a parenting program for Japanese and Vietnamese mothers, which has adapted the Nobody's Perfect program to the local cultural context and operational feasibility.

There are several opportunities within the Japanese and Vietnamese health systems to screen for lack of confidence so as to provide the adequate supports these mothers need in a timely manner. But these opportunities are often missed by health professionals. Pregnant women in Japan are required to report their pregnancies to a municipal office and are given a maternal and child health handbook. Some municipalities such as Sukagawa City provide health counseling to mothers at the time of pregnancy registration, but this is not a common practice. After a baby is born,

**Table 4** Associations between maternal confidence and mental health measurements among Japanese and Vietnamese mothers

	<i>N (%)<sup>a</sup> or Median (min, max)</i>			Model 1	Model 2	Model 3
	Total <i>N</i> = 392	Confident <i>N</i> = 276	Not confident <i>N</i> = 86	Crude OR (95% CI) <sup>b</sup>	Adjusted OR (95% CI) <sup>c</sup>	Adjusted OR (95% CI) <sup>d</sup>
<b>Japan</b>						
Mood (1–20) <sup>e</sup>	3 (1, 19)	2 (1, 19)	3.5 (1, 19)	1.15 (1.06–1.25)**	1.12 (1.02–1.24)*	1.09 (0.99–1.21) <sup>#</sup>
Self-efficacy (0–16) <sup>f</sup>	9 (0, 16)	10 (0, 16)	7 (0, 15)	0.87 (0.81–0.93)**	0.90 (0.83–0.97)**	0.91 (0.84–0.99)*
Depression <sup>g</sup>						
Not depressed	346 (89)	250 (92)	68 (79)	1.00	1.00	–
Depressed	32 (11)	23 (8)	18 (21)	2.88 (1.47–5.64)**	1.79 (0.80–3.97)	–
<b>Vietnam</b>						
	<i>N</i> = 294	<i>N</i> = 100	<i>N</i> = 193			
Mood (1–20) <sup>e</sup>	2 (1, 15)	2 (1, 15)	2 (1, 15)	0.99 (0.92–1.06)	2.53 (0.91–1.06)	–
Self-efficacy (10–40) <sup>f</sup>	30 (13, 40)	33 (13, 40)	29 (14, 40)	0.88 (0.84–0.93)**	0.90 (0.85–0.94)**	0.90 (0.60–0.95)**
Depression <sup>g</sup>						
Not depressed	226 (77)	87 (87)	139 (72)	1.00	1.00	1.00
Depressed	68 (23)	13 (13)	54 (28)	2.60 (1.34–5.04)**	2.44 (1.47–4.06)**	1.93 (0.96–3.90) <sup>#</sup>

OR odds ratio, CI confidence interval

<sup>#</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

<sup>a</sup> Totals across columns or rows for some items do not add up to the total number indicated in the top row or left column because of missing data

<sup>b</sup> Univariate logistic regression analysis was used

<sup>c</sup> Multivariate logistic regression analysis was performed by adding significant background factors (Japan: previous birth and pregnancy intention, Vietnam: mother’s age) to the Model 1

<sup>d</sup> Multivariate logistic regression analysis was performed by entering mental health measurements that were significant in Model 2 with the significant background factors into one model

<sup>e</sup> The Face Scale was used. This contains 20 drawings of a single face ranging from 1 (most positive mood) to 20 (most negative mood)

<sup>f</sup> For Japanese mothers, the General Self-Efficacy Scale was used. The score ranges from 0 to 16 and a higher score indicates higher efficacy. For Vietnamese mothers, the General Perceived Self-Efficacy was used. The score ranges from 10 to 40 and a higher score indicates higher efficacy

<sup>g</sup> For Japanese mothers, the Edinburgh Postnatal Depression Scale was used. The score ranges from 0 to 18, and the score of 9 or greater is suggested as an appropriate cut-off point for determining postpartum depression in Japan. For Vietnamese mothers, a two-question case-finding instrument for depression was used. Answering “yes” to one of two questions about depressed mood and anhedonia is indicative of depression

every municipality provides routine child health visits at around 3–4, 9–10, 18, and 36 months. Despite increasing attention to parenting difficulties in Japan, a recent survey among 300 randomly selected municipalities found that only a fourth of all providers assessed maternal physical and mental health conditions at these routine pediatric health visits (Nakano et al. 2003). Similarly in Vietnam, pregnant women register their pregnancies at local health centers, and child health visits are provided at these centers and at hospitals. Unfortunately, these opportunities are rarely utilized to assess maternal mental health or child rearing concerns and practices. We recommend that maternal and child health professionals in both countries recognize the need to screen for maternal confidence and provide support to mothers who describe a lack of confidence in their child rearing abilities. Providing adequate support in the prenatal period for women, particularly for those who are young and are first-time mothers or are bearing an unplanned pregnancy, may help them better prepare for parenting.

There were three important limitations of this study. First, since we recorded data of Japanese mothers from health checkup files in Sukagawa City and developed the Vietnamese survey sheets based on the Japanese files, the number of parenting and psychological measurements available for analysis was limited. Inclusion of a standardized maternal confidence questionnaire (Badr 2005) and other related measurements would have brought greater rigor and insight to the study. On the other hand, our intention was to devise maternal mental health assessments optimized for routine health service settings in two countries, so simplicity of the tools may actually represent a methodological advantage. Second, there is likely to be significant selection bias in both samples. Japanese mothers were sampled from only one city, and Vietnamese mothers from a university hospital preferred by clients with higher socioeconomic status. The proportion of women who completed high school among this group was over 40%, while the national rate of high school completion among women in their twenties and thirties is 20–30% (Committee



for Population, Family and Children [Vietnam] and ORC Macro 2003). Accordingly, Vietnamese first-time mothers' median age (27 years old) was much higher than the national average in urban areas (25 years old; Committee for Population, Family and Children [Vietnam] and ORC Macro 2003). We must therefore not make hasty judgments regarding the generalizability, as the prevalence of mothers who lack confidence may not be consistent in other groups or regions in the country, and the association between maternal confidence and socioeconomic status may be underestimated in our Vietnamese data. Finally, although carefully translated and back-translated, Vietnamese versions of self-efficacy and depression measurements have not been validated.

Despite the above limitations, the present study is the first to demonstrate unique similarity in mental state of mothers in Japan and Vietnam, which is not sufficiently addressed in both countries. The findings suggest the importance of providing Vietnamese and Japanese mothers who are young or who became a mother for the first-time or unexpectedly sufficient support to foster confidence and self-efficacy.

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