

## Effects of Baby Massage Based on Child's Temperament Characteristics on Child-Rearing

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*(Accepted May 27, 2016)*

Key words: temperament, baby massage, child-rearing

### Abstract

The purpose of this study is to demonstrate the effects of baby massage in consideration of children's temperament characteristics on mothers, and to discuss the effectiveness of dealing with their children in consideration of the children's temperament characteristics in their child-rearing. After 25 mothers answered the Standard Edition of the Toddler Temperament Questionnaire, they gave their children a massage designed according to the respective children's temperament characteristics. Then, each mother was asked what she was aware of through the baby massage. The survey suggested the baby massage in consideration of children's temperament characteristics can help mothers understand their children, which will lead the mothers to positive awareness about child-rearing and positive child-rearing behaviors.

### 1. Introduction

In childcare consultations, we can find proper solutions to various child-rearing problems for the caregivers by grasping the temperament characteristics of their children<sup>1)</sup>. Based on a few previous works (for example, Fullard et al.<sup>2)</sup>, Takei et al.<sup>3)</sup> constructed the Standard Edition of the Toddler Temperament Questionnaire (SETTQ) of six factors with 47 items to examine the relevance of child temperament and developmental problems<sup>4)</sup>, the relevance of child temperament and problem behavior<sup>5)</sup>, and the relation between child temperament and childcare anxiety<sup>6)</sup>. Thus, we have reported that it is clinically effective to grasp the children's temperament characteristics.

Although a child's temperament characteristics have an effect on the caregiver's anxiety about childcare, the effect is not necessarily strong<sup>6)</sup>. For reducing the caregiver's anxiety, it is important to increase the caregiver's self-efficacy in regard to the childcare behaviors<sup>7,8)</sup>. In the childcare consultations, it is therefore necessary to advise each caregiver to deal with her child in consideration of a child's temperaments<sup>8)</sup>. At the present stage, however, there is no report about the specific method of dealing with children in consideration of children's temperaments.

Baby massage given by mothers can naturally bring direct skin contact with their children, and the

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behavior of baby massage can increase the interaction between mother and child<sup>9</sup>). Mothers having an experience of giving a massage to their children are found to have less anxiety and stress of childcare than mothers who have never done the baby massage<sup>9</sup>). Baby massage has the advantage that mothers can see their children's characteristics more exactly through the baby massage and mothers can notice their children's mental and physical disorders while touching the children<sup>10</sup>). Further, it is reported that the skin contact through the baby massage can promote the parents' ability of child-rearing<sup>11</sup>). In other words, the baby massage can be regarded as one of the specific means for the caregivers to deal with their children and increase the caregivers' self-efficacy in regard to the childcare behaviors.

In this study, we paid special attention to the baby massage as a specific means for dealing with children while mothers rear their children, and aimed to demonstrate the effectiveness of dealing with the children in consideration of their temperament characteristics. By taking advantage of the results from this study, it will become possible to give each mother specific advice about the way to directly deal with her child, such as touching or the like in consideration of her child's temperament characteristics.

## 2. Methods

### 2.1 Participants

Although 26 pairs of mothers and one-year old children consented to participate in this study, one pair was absent on the day of the baby massage lesson. As a result, 25 pairs participated in the survey. More specifically, two pairs were chosen through personal connections and 23 pairs usually utilized a child-rearing support service provided by a university located in A city and accepted to cooperate in the survey. Only one pair had already experienced the baby massage.

### 2.2 Measurements

The SETTQ constructed by Takei et al.<sup>3</sup>) was used as a temperament questionnaire. The SETTQ consists of 47 items according to six scales: Negative affect reaction scale (for example, including the following item: "reveals emotions when things don't go as he/she wishes"), Sensitivity scale (for example, including the following item: "sticks to keeping things tidy and in order"), Adaptability scale (for example, including the following item: "cries and gets bad-tempered when touched by any stranger"), Extroversion scale (for example, including the following item: "actively moves around while exploring an unfamiliar place"), Rhythmicity scale (for example, including the following item: "eats almost the same amount at every dinner"), and Distractibility scale (for example, including the following item: "looks toward other children on hearing their voices"). The reliability and the validity of the SETTQ have been verified and good results have been established<sup>3,12-15</sup>). The mothers were asked to respond to each question on a four-point frequency scale ranging from 1 (never) to 4 (always).

After completion of the baby massage lesson, another questionnaire asked the mothers the following open-ended questions: "What did you think or feel about your child's temperament characteristics after checking the results of the SETTQ?," "What did you think or feel after you took the lesson of the baby massage based on your child's temperament characteristics?," "Was there anything you noticed or understood through this lesson of the baby massage program based on your child's temperament characteristics?" and "Please tell us anything you considered useful and anything you wanted to try after you knew your child's temperament characteristics and then took the lesson of the baby massage program."

### 2.3 Procedures

The flow of this survey is shown in Fig. 1. The mothers were first told orally and then by letter about the contents of the survey and the baby massage lesson. The mothers who accepted and agreed to cooperate in the survey were asked to respond to the SETTQ.

A few weeks later, a baby massage lesson (of two hours) was offered. The 25 pairs were divided into five groups (each group consisting of two to six pairs) so that one instructor could safely and efficiently conduct

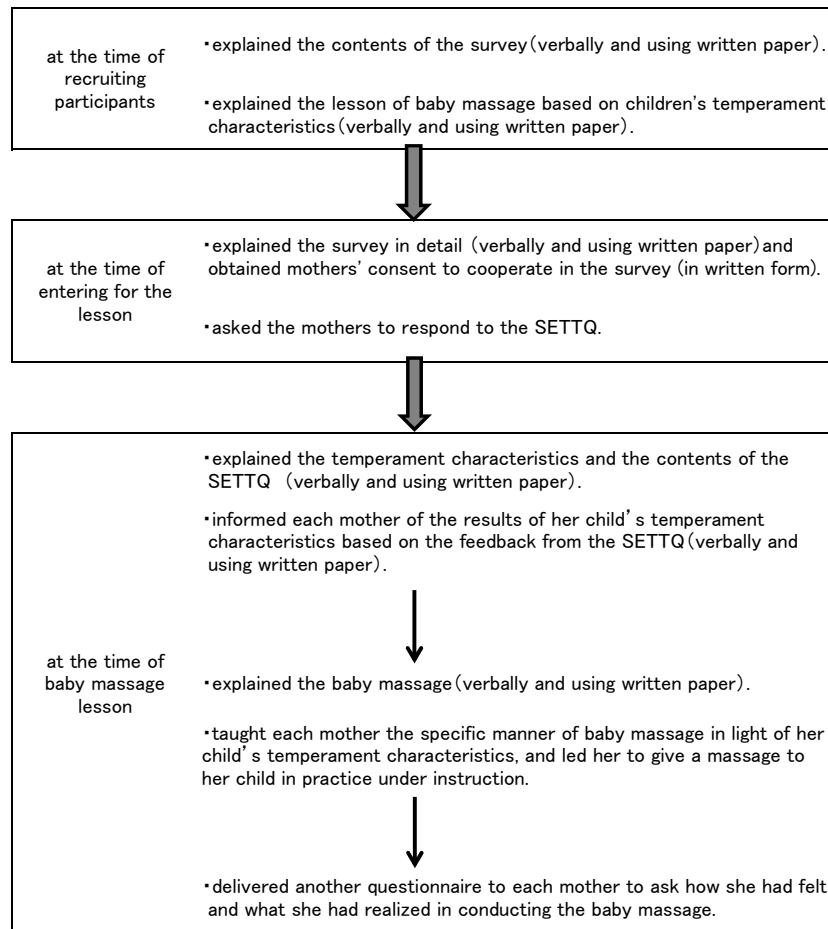


Fig. 1 Flow of the survey

the baby massage lesson. The baby massage lesson included the following three steps:

1. First, the temperament characteristics and the contents of the SETTQ were explained to the mothers verbally and using written paper. The results of the child's temperament characteristics based on the feedback from the SETTQ were given to each mother in written form.

2. Next, the baby massage instructor explained the baby massage to each mother verbally and using written paper, and taught each mother the specific manner of baby massage in light of her child's temperament characteristics.

Then, each mother practically gave a massage to her child by following the instructor's instructions. For example, the instructions were given as follows: "Your child's score on the sensitivity scale was high, that is, she is very sensitive. So, you'd better give her a baby massage so that her tension can be relieved." Then, the instructor taught the mother a specific manner of baby massage. In another case, the instructor said to a mother: "The high score of the extroversion scale showed that your child is an active and energetic child, so you'd better give him a baby massage in such a way as to calm him down." Then, the instructor specifically instructed the mother how to give him a baby massage.

3. After completion of the baby massage lesson, another questionnaire was delivered to each mother to ask how she had felt and what she had realized in conducting the baby massage.

#### 2.4 Ethical considerations

The participants were informed in words and written form of the purpose and the procedure of the survey, and the ethical considerations to the effect that they can participate in the survey of their own will and withdraw the participation any time, and the obtained data are strictly managed and stored.

When entering for the baby massage lesson, the participants signed a written consent to cooperate in the survey.

The survey was carried out after receiving approval of the ethics committee at Kawasaki University of Medical Welfare (Approval number.14-021).

### 2.5 Analytical Methods

We calculated the average scores for every scale (Negative affect reaction scale, Sensitivity scale, Adaptability scale, Extroversion scale, Rhythmicity scale, and Distractibility scale) of the SETTQ. The contents written by the mothers to the open-ended questions were thoroughly subjected to qualitative analysis.

## 3. Results and Discussion

The children included 18 boys and 7 girls, with the average age in months being 14.96 (SD=2.23) when their participation was decided. The average age of the mothers was 34.32 (SD=5.00).

Table 1 shows the attributes of the survey participants, the results of the temperament questionnaire, and the caregivers' feelings, comments and views after taking the lesson of baby massage based on their children's temperament characteristics.

To the question of "what did you think or feel about your child's temperament characteristics after checking the results of the SETTQ?", 15 mothers (60%) answered that their children's temperament characteristics evaluated by the SETTQ were not different from what the mothers realized in their daily life (cases 1, 2, 5, 7-9, 11, 13-17, 20, 22, 25), as shown in the following examples: "the results were right," and "I thought the results properly showed my child's characteristics." In addition, seven mothers (28%) wanted to deal with their children in such a way that they could contribute to their children's development by understanding their children's temperament characteristics (cases 1, 3, 4, 6, 20, 23, 25), as shown in the following examples: "I want to develop his individuality," "I'd like to prepare good environments for her," and the like.

To the question of "what did you think or feel after you took the lesson of baby massage based on your child's temperament characteristics?", 12 mothers (48%) answered that they accepted the baby massage program positively (cases 2, 3, 6, 7, 12, 13, 16, 18, 21, 23-25), as shown in the following examples: "I felt that the baby massage would be very helpful," "I'm glad I took the lesson," and the like. Further, 14 mothers (56%) raised their own awareness about childcare as the result of the baby massage according to their children's temperament characteristics, and they wanted to make use of the baby massage in dealing with their children (cases 1, 4, 5, 8, 10-15, 17, 18, 20, 22), as shown in the following examples: "I realized it is important to maintain emotional communication between mother and child through skin contact," "I thought I'd like to give him a massage everyday as much as possible," "I thought I'd like to relax my child," "I want to continue the baby massage at home," and the like.

To the question of "was there anything you noticed or understood through this lesson of the baby massage program based on your child's temperament characteristics?", 18 mothers (72%) were found to gain some new awareness in child-rearing (cases 1, 2, 8, 9, 11-22, 24, 25), as shown in the following examples: "I realized that I may continue the baby massage at my pace in my daily life, without taking it too seriously," "It was a very good chance for me to know his potential, his points to be developed and a clue to the way of talking to him," "He wants to do things for himself, which should be respected as the result of curiosity, one of his advantages, I knew," and the like. Further, 10 mothers (40%) wanted to apply to their child-rearing what they obtained through the baby massage program (cases 1, 3, 4, 6, 7, 11, 12, 15, 19, 23), as shown in the following examples: "I thought I'd like to use this experience to my advantage in my child-rearing," "I'd like to give my words to my child so as to convey my feelings to him," and the like.

To the question of "please tell us anything you considered useful and anything you wanted to try after you knew your child's temperament characteristics and then took the lesson of the baby massage

program," 24 mothers (96%) answered that this was a good chance to review how they should deal with their children and where they should pay attention in future (cases 1-3, 5-25), as shown in the following examples: "I'd like to think about the touching my child's body," "I'll try to have respect for his good points and increase the communication through skin contact," "I was encouraged to be a mother who can regard my child's weak points as strong points," "I'd like to lavish abundant affection on my child before it is too late," "I'd like to deepen the parent-child ties through the baby massage," and the like. In addition, five mothers (20%) answered that this program led them to awareness about dealing with their children (cases 2, 6, 8, 10, 14), as shown in the following examples: "I became aware that there are still many things I can do for my child as a mother," "When I think back, I am just irritated every day and I have hardly praised my child," "I realized that it is important to leave her to try and enjoy anything," and the like.

To summarize the results, some mothers became aware of the importance of dealing with their children in consideration of their children's temperament characteristics, thought about the relation with their children, and intended to make use of the baby massage as the means for dealing with their children in child-rearing. Our finding is different from previous reports in that dealing with children in consideration of their temperament characteristics has some effect on mothers in child-rearing. And moreover, as can be seen from the mother's description of "the lesson was a great help to relieve my anxieties" (case 21), to continue the baby massage in consideration of the children's temperament characteristics is also considered to bring about the effect of reducing mothers' anxieties resulting from childcare.

This study also has limitations and involves some challenges. The previous studies reported that the baby massage is effective for childcare<sup>16,17</sup>. Therefore, the data obtained from this study is not enough to consider some findings of this study to be exactly attributed to the effect of the baby massage in consideration of children's temperament characteristics, not to the effect of the baby massage itself. To clarify that point, it will become necessary to compare the effect obtained when the baby massage is conducted in consideration of children's temperament to that of baby massage simply done. In addition, the study did not demonstrate that the baby massage based on the children's temperament characteristics could become a specific means for increasing the mother's self-efficacy in regard to child-rearing and reducing the mother's anxieties resulting from child-rearing. To discuss that point, some closed-ended questions should be used to ask caregivers about their self-efficacy in regard to their childcare behaviors, and the results should be statistically analyzed. Then, it is considered to be necessary to discuss how much effect the baby massage in consideration of children's temperament characteristics may have on the increase of mother's self-efficacy in regard to child-rearing and the decrease of mothers' anxieties relating to child-rearing.

In conclusion, concrete advice on how to deal with children in consideration of the children's temperament characteristics may help mothers understand their children, and make mothers aware of many things in child-rearing and induce mothers to positive child-rearing behaviors.

#### Acknowledgments

- 1) This study was presented at the 79th annual convention of the Japanese Psychological Association in 2015.
- 2) We are grateful to Mrs. Hiroko Hisamatsu, a baby massage instructor at the baby massage salon "SweetPea" for her help with this research.
- 3) This work was supported by a Medical Welfare Research Grant from the Medical Welfare Department of Kawasaki University of Medical Welfare in 2014.

Table 1 The attributes of the survey participants, the results of the temperament questionnaire, and the caregivers' feelings, comments and views after taking the lesson of the baby massage based on their children's temperament characteristics (1)

No.	Mother's age	Child's age in months	Boy (B) or Girl (G)?	What number child?	The Standard Edition of Toddler Temperament Questionnaire (SETTQ)	What did you think or feel about your child's temperament characteristics after checking the results of the SETTQ?	
1	34	12	B	Second	Negative affect reaction	2.00	The results were right. The results were beneficial because they taught me the points which I should take care of.
					Sensitivity	2.50	
					Adaptability	2.20	
					Extroversion	4.00	
					Rhythmicity	3.29	
					Distractibility	3.43	
2	34	12	G	First	Negative affect reaction	2.89	I thought the results properly showed my child's characteristics.
					Sensitivity	2.13	
					Adaptability	3.40	
					Extroversion	3.29	
					Rhythmicity	3.29	
					Distractibility	3.57	
3	38	14	G	Second	Negative affect reaction	1.56	I thought I'd like to support my child in consideration of his low adaptability.
					Sensitivity	1.90	
					Adaptability	3.67	
					Extroversion	2.38	
					Rhythmicity	3.14	
					Distractibility	3.29	
4	34	15	G	First	Negative affect reaction	2.22	I felt that she often got distracted. However, I noticed I should accept her characteristics positively when I checked the results which evaluated my child as being able to adjust her mind to changing circumstances.
					Sensitivity	2.33	
					Adaptability	3.00	
					Extroversion	2.88	
					Rhythmicity	3.00	
					Distractibility	3.71	
5	28	14	B	First	Negative affect reaction	3.11	I thought the results were right.
					Sensitivity	2.10	
					Adaptability	3.00	
					Extroversion	2.88	
					Rhythmicity	3.29	
					Distractibility	3.29	
6	41	17	B	First	Negative affect reaction	2.67	I felt relieved for the present. However, I want to develop his individuality because it is natural children are different from each other.
					Sensitivity	2.50	
					Adaptability	3.00	
					Extroversion	3.00	
					Rhythmicity	3.57	
					Distractibility	3.57	
7	34	15	B	First	Negative affect reaction	2.57	I felt the results were right. They were beneficial because they made me notice that he had such temperaments.
					Sensitivity	2.00	
					Adaptability	2.75	
					Extroversion	3.43	
					Rhythmicity	2.71	
					Distractibility	3.43	
8	41	18	B	Second	Negative affect reaction	2.78	I agreed with the results on many points.
					Sensitivity	1.60	
					Adaptability	3.00	
					Extroversion	2.88	
					Rhythmicity	2.86	
					Distractibility	2.14	

After taking the lesson of the baby massage based on child's temperament characteristics		
What did you think or feel after you took the lesson of the baby massage based on your child's temperament characteristics?	Was there anything you noticed or understood through this lesson of the baby massage program based on your child's temperament characteristics?	Please tell us anything you considered useful and anything you wanted to try after you knew your child's temperament characteristics and then took the lesson of the baby massage program.
I thought I'd like to give him a massage everyday as much as possible.	The baby massage can relax both mother and child and may promote the child's development. And so I'll continue the baby massage at home.	I experienced much skin contact through the massage. It was a good lesson. I'd like to think about the touching of my child's body.
I thought the baby massage itself may be very helpful for parent-child communication. However, I missed the chance to ask about the relationship between children's temperament characteristics and the respective manners of massage based on the children's temperament characteristics. I'm sorry I missed the chance because my child was restless and moving around. I wished I had heard more information.	Although this relates to the field of coaching, as Mrs. A (baby massage instructor) mentioned, I thought it might be important to try to explain to my child in words. She seems to understand the words more than I expected. I realized that I may continue the baby massage at my pace in my daily life, without taking it too seriously.	My child is due to go into hospital from next month. I suppose both my child and I will be under great stress. I hope we'll have good time free from the stress while in hospital by continuing the baby massage I was taught this time. I spent a pleasant time when I became aware that there are still many things I can do for my child as a mother.
I was worried that my child was apt to get cold. I was lucky that I could know the parts to be warmed up.	I thought I'd like to try the baby massage because I heard that the massage would be effective against child's grizzling which occurs when coming home from the park.	The same as left.
The SETTQ results showed her strong tendency of being afraid of strangers. So, I thought I'd like to remove even a few fears from her by the baby massage I learned today.	Since I knew her body was cold, I wanted to sufficiently warm her body.	I appreciate thoughtful instructions offered one by one. It was helpful of the student assistants to take care of the children.
I understood his temperament characteristics. So, I thought I'd like to give him a massage suitable for his characteristics.	I was happy that my child seemed to get comfortable as I gave him a massage.	My child sleeps lightly. So, I thought I'd like to give him a massage at night.
I don't know the effect of this program, but I was lucky to come and listen to the baby massage instructor.	I realized that there are different ways other than what I believe is good in doing things, bringing up children and thinking. I thought I'd like to use this experience to my advantage in my child-rearing.	I want to find and bring out my child's good points. I'd like to develop myself together with him. I'll try not to forget a feeling of gratitude to him because there are many things I learn from him.
The lesson was very good for me. I guessed the massage would be difficult because my child was restless. However, the massage was well adapted for the temperament of each child, so that the effect was exceptional!	I guessed the massage would be difficult because my child was restless, but in fact, he looked very comfortable during the massage. I thought I'd like to give him a massage regularly.	I'd like to develop his temperaments. I'll try to have respect for his good points and increase the communication through skin contact.
I realized it is important to promote child's development and maintain emotional communication between mother and child through skin contact.	There were many points in my child which made me think of him as being troublesome. This lesson taught me his good points.	When I think back, I am just irritated every day and I have hardly praised my child. I appreciate this chance. I was encouraged to be a mother who can regard my child's weak points as strong points. Thank you for looking after my child who didn't stay still.

Table 1 The attributes of the survey participants, the results of the temperament questionnaire, and the caregivers' feelings, comments and views after taking the lesson of the baby massage based on their children's temperament characteristics (2)

No.	Mother's age	Child's age in months	Boy (B) or Girl (G)?	What number child?	The Standard Edition of Toddler Temperament Questionnaire (SETTQ)	What did you think or feel about your child's temperament characteristics after checking the results of the SETTQ?	
9	37	15	B	First	Negative affect reaction	2.89	The results were quite right. I said, "exactly!"
					Sensitivity	1.80	
					Adaptability	2.33	
					Extroversion	3.00	
					Rhythmicity	2.14	
					Distractibility	2.86	
10	31	16	G	First	Negative affect reaction	2.89	I thought her temperament characteristics were within the average ranges as a whole. It was fun comparing her characteristics seen from a parent's viewpoint with the results of SETTQ.
					Sensitivity	2.90	
					Adaptability	4.00	
					Extroversion	3.00	
					Rhythmicity	3.57	
					Distractibility	3.86	
11	27	17	B	First	Negative affect reaction	2.58	I found the results to be convincing. The results reminded me of what the baby massage instructor had said to me in the massage lesson.
					Sensitivity	2.40	
					Adaptability	2.17	
					Extroversion	3.83	
					Rhythmicity	3.57	
					Distractibility	3.14	
12	45	18	B	First	Negative affect reaction	3.00	I thought he felt pressure to be a good child.
					Sensitivity	2.10	
					Adaptability	2.33	
					Extroversion	3.86	
					Rhythmicity	3.14	
					Distractibility	3.43	
13	33	15	B	First	Negative affect reaction	1.89	I thought the results might be right. The sensitivity was lower than I expected.
					Sensitivity	1.70	
					Adaptability	3.00	
					Extroversion	3.00	
					Rhythmicity	3.57	
					Distractibility	3.14	
14	31	13	G	First	Negative affect reaction	2.00	I've vaguely felt what she is like, but the values and terms convinced me of her character objectively. Although the baby massage instructor had told me to accept the results positively, I saw the results somewhat negatively for the first time.
					Sensitivity	2.33	
					Adaptability	3.17	
					Extroversion	2.88	
					Rhythmicity	3.43	
					Distractibility	3.43	
15	37	15	G	First	Negative affect reaction	1.67	I thought what I felt about my child was almost reflected in the results.
					Sensitivity	2.44	
					Adaptability	2.00	
					Extroversion	3.86	
					Rhythmicity	3.57	
					Distractibility	3.29	
16	30	16	B	First	Negative affect reaction	2.75	I thought his characteristics were just as shown in the graphs.
					Sensitivity	1.60	
					Adaptability	4.00	
					Extroversion	3.25	
					Rhythmicity	3.14	
					Distractibility	2.43	



After taking the lesson of the baby massage based on child's temperament characteristics		
What did you think or feel after you took the lesson of the baby massage based on your child's temperament characteristics?	Was there anything you noticed or understood through this lesson of the baby massage program based on your child's temperament characteristics?	Please tell us anything you considered useful and anything you wanted to try after you knew your child's temperament characteristics and then took the lesson of the baby massage program.
I felt a little depressed at the fact that my child was more sensitive to strangers than I usually realized. But, I felt at ease when I saw him being in good spirits at last.	It was a very good chance for me to know his potential, his points to be developed, and a clue to the way of talking to him.	I thought that I'd like to develop his personality little by little.
First, I wondered if it would be possible to give her a massage because she was a bouncing child. In fact, she was getting warm and looked comfortable when I gave her a massage. I realized the baby massage could be done over one year old. I'd like to do as much as possible at home.	It was very helpful for me to get the instructions about my child's potential based on her temperaments.	While we are at home, I often tell my child not to do what she is trying. I realized that it is important to leave her to try and enjoy anything that is not dangerous. I think I'd like to increase the skin contact more and more to ease her mind.
I wished the massage would make him more calm and get to sleep easily. If I had a handout, it would be helpful because there were something I wanted to make a note of during the lesson. I hope the lesson will be held regularly.	I used to try the baby massage, but it was difficult because my child was restless. Today, I managed to apply a massage to his legs as first instructed. I feel like trying the baby massage at home. He wants to do things for himself, which should be respected as the result of curiosity, one of his advantages, I knew. Usually, I am apt to say to him, "No!" to suppress his curiosity, but I'd like to be careful not to.	I thought I'd like to start the baby massage tonight so that he can get to sleep easily and his curiosity will be properly developed.
I was lucky that I had a chance to get the information useful for easily conducting the baby massage. I realized the importance in warming the body and keeping the sole soft.	I found curiosity is important. I'd like to give my words to my child so as to convey my feelings to him.	I thought I'd like to try to relax him.
The lesson was very good! I thought I'd like to relax my child. I'd like to give him a massage everyday if possible.	I found that babies should not be raised based only on parents' wishes, but should be raised to develop their characteristics and individualities.	I thought I'd like to warm his body, relax him, and apply a massage to the soles of his feet. I want to know about the baby massage more and more.
It was nice that her skin became smooth. I'd like to try the massage in comfortable circumstances at home when she is in a good mood. I'm looking forward to seeing how she reacts.	I want to properly press the pressure points "to strengthen the mind!" Although my child looked sleepy and displeased, she didn't grizzle and allowed me to give her a massage as she was clinging to me. She seemed to be comfortable.	I thought it may depend on how parents feel and talk to children whether the children's characteristics can be developed positively or not. I want to get along with my child in such a way that I can develop her good points without missing.
I expected that she would be restless and move around. But, I knew there was something I could do without forcing her to lie down for massage, so that I thought I'd like to continue the baby massage little by little at home.	I was surprised at my child's loud crying. She had never cried like that, not only at home, but also outside. But, the massage to her back calmed her down a little. I thought I'd like to respond to her in that way if I'm confronted with the same situation.	It is hard to bring up my child because she is so active. But, I'm going to do my best to develop that point as one of her advantages.
It was the first chance for me to learn the baby massage. I was glad that my child looked comfortable.	When I started the massage, he didn't stay still. But, he gradually calmed down and allowed me to give him a massage.	I thought I'd like to continue the baby massage everyday little by little to calm him down.

Table 1 The attributes of the survey participants, the results of the temperament questionnaire, and the caregivers' feelings, comments and views after taking the lesson of the baby massage based on their children's temperament characteristics (3)

No.	Mother's age	Child's age in months	Boy (B) or Girl (G)?	What number child?	The Standard Edition of Toddler Temperament Questionnaire (SETTQ)	What did you think or feel about your child's temperament characteristics after checking the results of the SETTQ?	
17	32	12	B	First	Negative affect reaction	1.78	The scores were low as a whole, but I thought the results were right.
					Sensitivity	1.30	
					Adaptability	2.80	
					Extroversion	2.13	
					Rhythmicity	3.43	
Distractibility	2.86						
18	29	12	B	First	Negative affect reaction	2.56	I was glad about good descriptions about his character.
					Sensitivity	2.40	
					Adaptability	2.50	
					Extroversion	3.63	
					Rhythmicity	3.71	
Distractibility	3.57						
19	35	15	B	First	Negative affect reaction	1.88	I was somewhat relieved to know that his temperament characteristics were within the average ranges.
					Sensitivity	2.57	
					Adaptability	2.50	
					Extroversion	3.38	
					Rhythmicity	4.00	
Distractibility	3.50						
20	40	17	B	First	Negative affect reaction	2.44	The results were convincing. I want to develop his precious character.
					Sensitivity	2.60	
					Adaptability	2.33	
					Extroversion	3.88	
					Rhythmicity	3.57	
Distractibility	3.43						
21	41	14	B	First	Negative affect reaction	2.44	I thought he resembled me and his father in many temperaments.
					Sensitivity	1.60	
					Adaptability	3.67	
					Extroversion	1.88	
					Rhythmicity	3.00	
Distractibility	3.29						
22	32	15	B	First	Negative affect reaction	3.00	I thought the results were almost right.
					Sensitivity	2.20	
					Adaptability	2.40	
					Extroversion	3.43	
					Rhythmicity	2.71	
Distractibility	2.86						
23	39	13	G	First	Negative affect reaction	2.00	Contrary to my expectations, her scores were within the average ranges, and I felt relief at the results. She was predicted to be a top student when she grows up, so that I thought I'd like to prepare good environments for her.
					Sensitivity	1.75	
					Adaptability	3.00	
					Extroversion	3.00	
					Rhythmicity	3.29	
Distractibility	3.00						
24	27	13	B	First	Negative affect reaction	2.44	I thought the scores were totally low.
					Sensitivity	1.30	
					Adaptability	2.00	
					Extroversion	3.25	
					Rhythmicity	2.29	
Distractibility	2.71						
25	28	21	B	First	Negative affect reaction	3.33	I was surprised that the results were absolutely right. At the same time, I thought I'd like to accept his characteristics and develop his potential as much as possible.
					Sensitivity	2.30	
					Adaptability	3.83	
					Extroversion	2.88	
					Rhythmicity	2.57	
Distractibility	3.29						

After taking the lesson of the baby massage based on child's temperament characteristics		
What did you think or feel after you took the lesson of the baby massage based on your child's temperament characteristics?	Was there anything you noticed or understood through this lesson of the baby massage program based on your child's temperament characteristics?	Please tell us anything you considered useful and anything you wanted to try after you knew your child's temperament characteristics and then took the lesson of the baby massage program.
My child received massage quietly and looked comfortable, so that I'd like to continue the baby massage.	I was surprised that my child's body was colder than I expected.	I knew my child's temperaments. I want to develop his temperaments positively by continuing the baby massage.
I'm glad I took the lesson. I want to continue the baby massage at home.	My child seems to like the massage given to his back and arms in circles.	I'd like not to spoil his good temperaments of rhythmicity and extroversion.
I was glad that my child was relaxed. I also felt relaxed.	The baby massage according to my child's temperaments seemed to warm my child's body and heart. I thought I'd like to start the baby massage at home today.	I had a relaxing and peaceful time through skin contact with my child. I thought I'd like to continue the baby massage directly after a bath (before getting to bed) so that my child can sleep soundly at night.
There were many things I first heard of. I'd like to make use of advice I got.	I knew that the part where a massage should be applied varies depending on the personality (temperaments). It would be a big help to appropriately use the baby massage according to the situations.	I want to spend the life for child-rearing as thinking much of the time with my child and the manner of how to deal with him.
That was an unknown world. It was nice that I could take the lesson this time.	I realized the lack of maternal affection ...	I'd like to lavish abundant affection on my child before it is too late. (I'm going to give him a massage everyday.) The lesson was a great help to relieve my anxieties. Thank you so much.
First, my child got excited at unfamiliar circumstances, so that he didn't let me give him a massage. In the latter half, however, he removed his clothes to allow me to apply a massage to his back and stomach, and he looked comfortable. I believed he must be very comfortable because I found he urinated so much.	My child became calm while I applied a massage to her back.	I'd like not to forget the massage to her back. I thought I should lavish more affection on my child.
Initially, I wasn't keen on the program because I expected my child to cry and refuse. However, it was nice to join the program because she looked so happy. I'd like to join the program again if I have another chance.	I was told that my child's bottom and feet were cold, and that was the reason why she cries in the night. I thought I'd like to sufficiently warm them.	I'd like to continue the baby massage because I learned that the massage could make us peaceful.
There were many things I first heard of. I am glad I took the lesson.	I've never cared about the body temperature. This time, I realized how cold my child's body was.	I think I'll give my child a massage so that he can uninterruptedly sleep all night.
I am glad to join the lesson this time because I have been much interested in baby massage.	I found that there was a method for relaxing my child. Until now, I also got irritated when my son was put in a bad mood. I found the baby massage would bring physical and mental refreshment.	I'd like to deepen the parent-child ties through the baby massage.

## Footnote

In this paper, the term “childcare behavior” is defined as different from the term “childcare.” The childcare behavior includes the specific behaviors in child-rearing, such as dandling, putting the child to bed, feeding the child and so on, while the term of childcare has a broader definition, covering the above-mentioned childcare behavior.

## References

1. Syouji J : The toddler temperament and development. *Gunma Child Health*, **58**, 58-68, 2000. (In Japanese, translated by the author of this article)
2. Fullard W, McDevitt SC and Carey WB : Assessing temperament in one-to three-year-old children. *Journal of Pediatric Psychology*, **9**(2), 205-217, 1984.
3. Takei Y, Terasaki M and Kadota M : Construction of new toddler temperament questionnaire. *The Japanese Journal of Personality*, **16**(1), 80-91, 2007. (In Japanese with English abstract)
4. Takei Y, Terasaki M and Mimaki N : The relevance of child temperament and developmental problem through infant. *Health Care*, **48**(8), 625-629, 2006. (In Japanese, translated by the author of this article)
5. Takei Y and Terasaki M : A parent assessment of toddler temperament: A study of the relation between temperament questionnaires for 18 month old health examinations and CBCL. *Kawasaki Medical Welfare Journal*, **14**(2), 261-166, 2005. (In Japanese with English abstract)
6. Takei Y, Terasaki M and Kadota M : The influence of toddler temperament on the childcare anxiety. *Kawasaki Medical Welfare Journal*, **16**(2), 221-227, 2007. (In Japanese with English abstract)
7. Imoto Y, Terasaki M and Takei Y : A study of the mothers'childcare anxiety —the relations of the child temperament and the mother's self-efficacy in child-rearing—. *The 18th Annual Convention of the Japan Society of Developmental Psychology*, 749, 2007. (In Japanese, translated by the author of this article)
8. Takei Y, Terasaki M, Takao K and Kadota M : A qualitative interview study of mothers'anxiety about childcare. *Kawasaki Medical Welfare Journal*, **18**(1), 219-225, 2008. (In Japanese)
9. Mitsumori Y and Yamaguchi M : Investigations concerning the prevention of child abuse during the period mothers are bringing up their children. *Journal of Japanese Society of Child Health Nursing*, **18**(2), 22-28, 2009. (In Japanese with English abstract)
10. Oba N : The baby massage for maternal and child health service (1) the definitions and effects of baby massage. *Chiiki Hoken*, 56-65, 2004. (In Japanese, translated by the author of this article)
11. Kaji M : Consideration of the possibilities of baby massage in infant care. *Takada Junior College Bulletin*, **26**, 73-82, 2008. (In Japanese)
12. Mizuko M, Takei Y, Shimizu M and Terasaki M : The study II of the parent assessment of toddler temperament: The comparison of the Standard Edition of the Toddler Temperament Questionnaire and the behavior observed. *The 60th Annual Convention of the Chugoku Shikoku Psychological Association*, 27, 2004. (In Japanese, translated by the author of this article)
13. Takei Y, Mizuko M, Shimizu M and Terasaki M : The study I of the parent assessment of toddler temperament: The comparison of the Standard Edition of the Toddler Temperament Questionnaire and the behavior observed. *The 60th Annual Convention of the Chugoku Shikoku Psychological Association*, 26, 2004. (In Japanese, translated by the author of this article)
14. Takei Y, Shimizu M, Mizuko M and Terasaki M : The study IV of the parent assessment of toddler temperament : The relation of the Standard Edition of the Toddler Temperament Questionnaire and the behavior observed. *The 69th Annual Convention of the Japanese Psychological Association*, 1200, 2005. (In Japanese, translated by the author of this article)
15. Takei Y : The Relationship between the toddler characteristics which were described by a parent and the toddler temperament which were assessed by the questionnaires. *The Journal of Child Health*, **65**(6),

- 791-798, 2006. (In Japanese)
16. Mitani A, Tanaka M and Nagasaka Y : Review of some literatures regarding the effects of baby massages by fathers and mothers upon their psychological and developmental states. *Academic Archives of Yamaguchi Prefectural University*, 8, 135-143, 2015. (In Japanese with English abstract)
  17. Hosoi K : The practice and effect of baby massage lesson. *Shukutoku University Junior College Bulletin*, 50, 51-67, 2011. (In Japanese, translated by the author of this article)

