

A Study of Supportive Intervention for Stress Reduction and  
Perceived Confidence of Child-Rearing Mothers

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Abstract

With increasing numbers of mothers affected by anxiety and stress relating to child care as well as the problem of increasing numbers of abuse cases, support is needed to help mothers develop child-care confidence and alleviate the stress of parenting.

In this study, a 90-minute lecture on child-care support was held for a group of mothers with infants (n=31). The lecture comprised the essential needs of the soul support method utilizing the SAT theory-based guidance method and reward-system images. The purpose of the study was to examine 1) the perceived child-care confidence of child-rearing mothers and the short-term effects of stress reduction around the time of the intervention, and 2) the extended effects for three month after the intervention.

The results were: 1) around the time of the intervention, significant improvements were observed in the level of self-esteem, emotional support network, child-care confidence, self-repression, depression and subjective stress, while a significant reduction was observed in the cortisol level of the saliva; and 2) the

extended effects were raised levels of self-esteem and child-care confidence, and a significant, continual reduction in depression level. Compared with the pre-intervention period, the anxiety trait was significantly lower in the analysis conducted three months after the intervention.

These results suggest that a group intervention using the essential needs of soul support method is capable of increasing mental health conditions and child-care confidence, and providing support for the reduction of child-care anxiety and stress

Key words: child-care support, essential needs of soul support method, self-esteem, child-care confidence, image-script

## I. Introduction

Accompanying the reduction in the number of live births and spread of the nuclear family starting in the 1980s, the number of mothers suffering from child rearing anxiety and parenting stress began to increase and the rise in child abuse cases became a serious issue. The number of child abuse cases increased by nearly 17 fold, from 1,961 cases in 1994 to 32,979 cases in 2004, with those cases involving the biological mother accounting for the largest number of child abuse cases.<sup>1)</sup> Child-rearing anxiety is one cause of parenting stress,<sup>2)3)</sup> and child rearing anxiety coupled with lack of confidence is believed to lead to child abuse.<sup>4)</sup>

The government has adopted various measures to tackle these problems, including the Angel Plan, the New Angel Plan, *Sukoyaka* (i.e., healthy and happy) Family 21, Plus One Proposal to End the Falling Birthrate, and Support for Nurturing the Next Generation. At the community level, support measures include setting up child-rearing support centers and family support centers that provide, among other things, a place of recreation

and relaxation for parents and children alike and a place where mothers can drop off their children while they go out.

In an intervention study of home visitations by nursing professionals to provide postpartum care one month after childbirth, over 90 percent of the participating mothers said that the visitations were useful, as they helped reduce their anxiety and improve their self-confidence, thus suggesting that home visitations by nursing professionals serve as an effective support for child-rearing mothers.<sup>5)</sup> By contrast, in a study of a pediatrician who provided child-rearing guidance in a class for child-rearing mothers, mothers with one month or younger babies said that the guidance did not help reduce their child-rearing anxiety.<sup>6)</sup> A study conducted in a parenting course attended by six mothers suffering from child-rearing anxiety found that although action group work designed to help these mothers develop an effective coping behavior toward their children helped increase their knowledge about behavior modification, it did not result in any systematic change in their actual coping behavior toward child rearing.<sup>7)</sup> Such conventional methods of providing support are basically conduit for conveying knowledge and information for reducing anxiety or stop-gap measures mainly designed to bring about behavioral modification. Thus support is clearly needed to help mothers reduce child-rearing anxiety and stress in a fundamental way.

Stress is perceived when things do not turn as expected,<sup>8)</sup> and today's perception is related to the image-scripts generated by past images.<sup>9)</sup> According to T. Munakata,<sup>9)</sup> our perception or understanding of reality or future predictions are based on scripts that are reconstructed to match our expectations (predictions) drawn from our past knowledge and experience. Additionally, Munakata refers to (i) images based on sensory information input from all sensory spheres (including the sense of smell, taste and balance, somatic sensations,

etc.) and images based on sensory information (including sadness, enjoyment, fear, etc.) that generates value by being stored in the amygdala, and (ii) images based on stories of behavioral information output from these two sets of images as image-scripts. Munakata then points out that today's self-image-scripts are triggered by memories of past images rooted in the growth environment of one's parents.

Image memories differ depending on whether the essential needs of the soul are fulfilled or not. According to the essential needs of the soul theory,<sup>9)</sup> human beings possess three basic needs of the soul expressed: (a) "I want my own needs to be fulfilled with other person's love"; (b) "I want to develop self confidence so I can fulfill my needs by myself"; and (3) "I want to fulfill other people's needs unconditionally with my own love." A negative image of unfulfilled essential needs of the soul formed in the growth environment and the like stored in the amygdala will develop into a trauma, which in turn will make a person more prone to develop a negative self image-script.<sup>9)</sup> Removing a negative self-images script is difficult once it has been formed, and the presence of a negative self image-script makes a person more prone to perceive each of the various stimuli provided by the environment as stress.

It is common knowledge that when a stimulus is perceived as stress, CRH (corticotropin-releasing hormone), which induces the secretion of ACTH (adrenocorticotropin hormone), is released from the hypothalamic area of the brain, ACTH is secreted from the pituitary gland, and the stress hormone cortisol is secreted from the adrenal cortex.<sup>10)</sup> Since the cortisol level in the blood is quickly reflected in the cortisol level in the saliva,<sup>11)</sup> in recent years, four separate studies have been conducted to measure the cortisol level in the saliva as a stress indicator,<sup>12-15)</sup> All four studies found a correlation between the rise in the cortisol level and the increase in stress. Thus it is believed that cortisol triggers a variety of diseases.<sup>9)</sup>

From the perspective of the cerebral nervous system, an image is a transfer pattern of a cranial nerve circuit formed when two neurons are joined at a synapse.<sup>9)</sup> The SAT theory asserts that the synopsis connections are strengthened through the creation of cranial nerve activity patterns. These patterns are created (i) by forming a reward-system (positive) image-script that satisfies the cranial nerve activity patterns for a cranial nerve activity pattern that up to now responded only negatively to external stimuli because the essential needs of the soul were not satisfied, and (ii) by acting repeatedly on the basis of that positive image-script over a long period of time.<sup>9)</sup> Under this SAT theory, counseling utilizing images that support behavioral modification and self-growth is provided on a daily basis, resulting in reduced stress.<sup>16)</sup> Past studies have confirmed the effectiveness of individual counseling in improving the child-rearing mother's self-esteem and child-care confidence. In order to lower the level of anxiety and stress of child-rearing mothers, it is hoped a support method will be designed to raise the level of their child-care confidence and self-esteem.<sup>17)</sup>

This study examines, both quantitatively and qualitatively, the short-term effects of intervention and their extended effects three months after the intervention. The objective is to reduce stress and improve child-care confidence for groups of child-rearing mothers in a fundamental way. The intervention is carried out by using the essential needs of soul support method using a guidance method based on the theory and technique of SAT support method and the reward-system images that fulfill the essential needs of the soul.

## II. Research Methods

### 1. Targets and survey methods

With the cooperation of the healthcare center of Town A, Prefecture S, a group of child-rearing mothers

were selected as the intervention group using a snowball sampling technique and urged them to participate in a “child-rearing support course.” A total of 31 child-rearing mothers participated in the course, five of whom either came late or were not rearing a child at the time of the intervention. Thus 26 of the 31 participants (84%) were targeted for the analyses. Sixteen of the original participants (62%) cooperated in the analyses conducted three-month after the intervention.

With the cooperation of the Town A health center, the same snowball sampling method was used to select a group of child-rearing mothers as the non-intervention group and the first survey was conducted while the intervention group was participating in the child-rearing support course. Questionnaires were distributed to all 17 mothers of the intervention group. They all filled out the questionnaires and returned them. Seven child-rearing mothers (41%) cooperated in the second survey, which was timed to dovetail with the three-month after analysis of the intervention group.

For the intervention group, the pre-course questionnaires and post-intervention questionnaires were collected in individual envelopes before and after the course, respectively. For the non-intervention group, the questionnaires were distributed at the healthcare center and collected in individual envelopes. In the survey conducted three months after the intervention, a questionnaire packet enclosed with a return envelope and a written request for cooperation was mailed out to each participant and collected through the mail. The survey was conducted over a period of three months, from August to November 2004.

In this study, around the time of the intervention, samples of saliva were taken using the essential needs of soul support method to measure the cortisol level in the saliva of the participants as a stress indicator. Since saliva secretion reacts sensitively to stress, the saliva sampling was taken during rest hours.

Out of ethical consideration, this study was subject to epidemiological review by the Tsukuba University Ethics Committee and approved. Before implementation, among other things, the authors explained in writing that the objective of the study and stressed that cooperation in the study was optional, that the respondents were free to decide whether to put down their names or not, that the answers they write down should reflect their own views, and that the collected data will be treated quantitatively. For those participating in the child-rearing support course, the authors verbally explained the purpose of the course and asked for cooperation. The participants agreed to cooperate. Those in the intervention group were asked to submit a certificate of consent, which they did.

The standardized Japanese versions of two existing psychological scales were used: the State Trait Anxiety Inventory <sup>18)</sup> and the Self-Rating Depression Scale. <sup>19</sup> The developers of both scales consented to the authors' request to utilize them.

## 2. Composition of the questionnaire

The questionnaire consists of existing psychological scales on child-care confidence, and child-care anxiety (whose attributes, reliability and validity have been reviewed). Table 1 shows the contents of the scales and the alpha coefficients ascertained in the study.

Table 1 Composition of the questionnaire

Scale	Developed	Item	Score	Content of measurement	coefficient
1 Self-esteem	Rosenberg 1965,Japanese version Munakata et al 1987	10	0 ~ 10	Measures the degree of affirmative self-image.	.860
2 Self-repression	Munakata 1996	10	0 ~ 20	Measures the inclination to repress one's feeling or thoughts so that others do not come to dislike the individual.	.772
3 Emotional support network	Munakata 1996	10	0 ~ 10	Measures the degree of awareness of emotional support from family and others, respectively.	.854
4 Problem-solving	Munakata 1990	10	0 ~ 20	Measures the tendency toward effective and positive problem-solving.	.652
5 Interpersonal dependency	Hirschfeld1977,compiled by P.McDonald Scott	18	0 ~ 18	Measures the degree of excessive interpersonal dependency.	.742
6 Trait anxiety (STAI)	Spielberger 1970,compiled by Mizuguti et al	20	20 ~ 80	Measures the tendency to feel anxious.	.912
7 Depression (SDS)	Zung 1965 compiled by Hukuda	20	20 ~ 80	Measures the tendency towards depression.	.841
8 Child-care confidence	Yajima et al 2004	10	10 ~ 40	Measures the degree of the child-care confidence.	.880
9 Child-care anxiety	Extraction from Profile-scale by Kawai et al 1997	13	13 ~ 52	Measures the degree of the child-care anxiety.	.853

### 3. Method of intervention

The intervention was conducted by two SAT counselors licensed by the Academy of Health Counseling.

The intervention lasted 90 minutes – 30 minutes for guidance, 45 minutes for on-site training, and 15 minutes for filling out the post-intervention questionnaire.

### 4. Contents of the Intervention

(1) The intervention involved on-site training using the method of communication with children based on SAT therapy, the essential needs of soul theory, the guidance based on the flashback theory, and the essential needs of soul support method.

(2) What is the essential needs of soul support method?

The essential needs of soul support method is based on the essential needs of soul theory. The method



is built from the three techniques discussed below to help child-rearing mothers cope with the problems they currently face by (a) creating a positive image-script that fulfills the essential needs of the soul that are at present unfulfilled, and (b) by using the positive image-script formed with the essential needs of soul method even if there is a negative image-script that flashes back, and forth between past and future at the time of stress perception. Additionally, free-description sheets used to have the participants indicate for each of the three techniques discussed below their subjective stress levels, their impressions, and the way they cope with stress.

(a) Making physical contact: In this technique, the participants, in pairs, empathetically make physical contact.

This is done by imagining the person one loves with the region or force one prefers and in such a way that a signal of unconditional love is sent from one's hand to the hand of the person one is paired with.

Noradrenalin is secreted when stress is perceived, and this causes symptoms to appear in various regions of the body. <sup>9)</sup> The physical contact technique aims to control negative emotions, promote pleasurable sensations and reduce the present somatic symptoms by inducing the release of dopamine and serotonin from the brain by producing somatosensory stimuli through physical contact.

(b) Forming a favorable inner-womb image and love signaling method: These techniques aim to help the participants fulfill the essential needs of their soul by having them create a favorable image of themselves in their mother's womb by applying structured regressive hypnosis and offering words that convey a signal of love so that the participants will be able to hold a positive image-script, and thereby weaken the flashback of negative images from the past and also apply that same positive image-script for the coming child.

(c) Forming a future self-image: This technique aims to fulfill the essential needs of the soul by creating and forming an image of the self enjoying life and living with exuberance and full of confidence. The technique also aims to help child-rearing mothers perceive the self acting in accordance with one's own values believes.

## 5. Analytical method

The survey results were analyzed using the statistics analysis software SPSS Ver. 11.0. The Friedman test was then administered to evaluate changes in the participants' subjective stress level during the intervention, the effects of psychological traits on their stress level around the time of the intervention, and the extended effects of the intervention. For the purpose of multiple comparisons, after administering the Wilcoxon coded ranking test, corrections were made using the Bonferroni inequalities

## III. Findings

### 1. Average psychological trait values of child-rearing mothers

Average psychological trait values of a total of 43 child-rearing mothers (belonging to either the intervention group or to the non-intervention group) were calculated and the following results were obtained: the self-esteem level rose 6.16 points; the self-suppression behavioral trait level, 9.14 points; the emotional support network family level, 8.53 points; the other than family level, 8.14 points; the problem solving behavioral trait level, 10.44 points; the interpersonal dependence type behavioral trait level, 6.53 points; and the trait anxiety level, 43.86 points

2. Comparison of the basic attributes and psychological trait of mothers in the intervention group and those in the non-intervention group

Table 2 shows the results of the Mann-Whitney test on the intervention and non-intervention groups administered to determine whether it is possible for the non-intervention group to serve as the control group in terms of basic attributes and psychological traits. Although differences were observed in the case of the mother's age and the age of her spouse, no significant differences were found in the case of other items. Thus it was concluded that the non-intervention group cannot serve as the control group.

Table 2 Comparison of the basic attributes and psychological traits of mothers in the intervention group and those in the non-intervention group, changes around the time of the intervention (intervention group n=26, non-intervention group n=17)

	Intervention group			Non-intervention group	Both crowd comparison
	Mean value before intervention	Mean value after intervention	p-value	before	p-value
Age of person in question	32.12 ( ±4.11 )			28.94 ( ±2.33 )	.013
Age of consort	34.81 ( ±5.93 )			30.88 ( ±3.36 )	.049
Number of those who cohabit	4.50 ( ±1.50 )			4.06 ( ±1.44 )	.305
Number of children	1.58 ( ±0.86 )			1.41 ( ±0.51 )	.819
Self-esteem	5.96 ( ±2.76 )	8.04 ( ±2.03 )	.000	6.47 ( ±2.38 )	.707
Self-repression	9.58 ( ±3.36 )	8.77 ( ±2.70 )	.070	9.18 ( ±3.43 )	.644
Emotional support network(family)	8.58 ( ±2.04 )	9.35 ( ±1.55 )	.007	8.48 ( ±2.50 )	.883
Emotional support network(others)	8.12 ( ±2.49 )	8.81 ( ±2.25 )	.007	8.18 ( ±2.63 )	.655
Problem-solving	10.58 ( ±3.01 )	10.27 ( ±2.66 )	.542	10.24 ( ±2.56 )	.515
Interpersonal dependency	6.77 ( ±3.37 )	6.35 ( ±3.69 )	.289	6.29 ( ±3.18 )	.546
Trait anxiety (STAI)	43.12 ( ±11.43 )	41.65 ( ±10.80 )	.252	45.12 ( ±9.56 )	.384
Depression (SDS)	40.15 ( ±9.02 )	37.46 ( ±7.55 )	.005	41.12 ( ±7.96 )	.645
Child-care confidence	26.46 ( ±5.37 )	29.81 ( ±4.61 )	.000	28.41 ( ±4.29 )	.178
Child-care anxiety	23.19 ( ±6.42 )	23.50 ( ±7.00 )	.806	21.76 ( ±4.86 )	.508
Cortisol level in the saliva	0.28 ( ±0.12 )	0.23 ( ±0.09 )	.002		

3. Changes in psychological traits and child-care self confidence around the time of the intervention

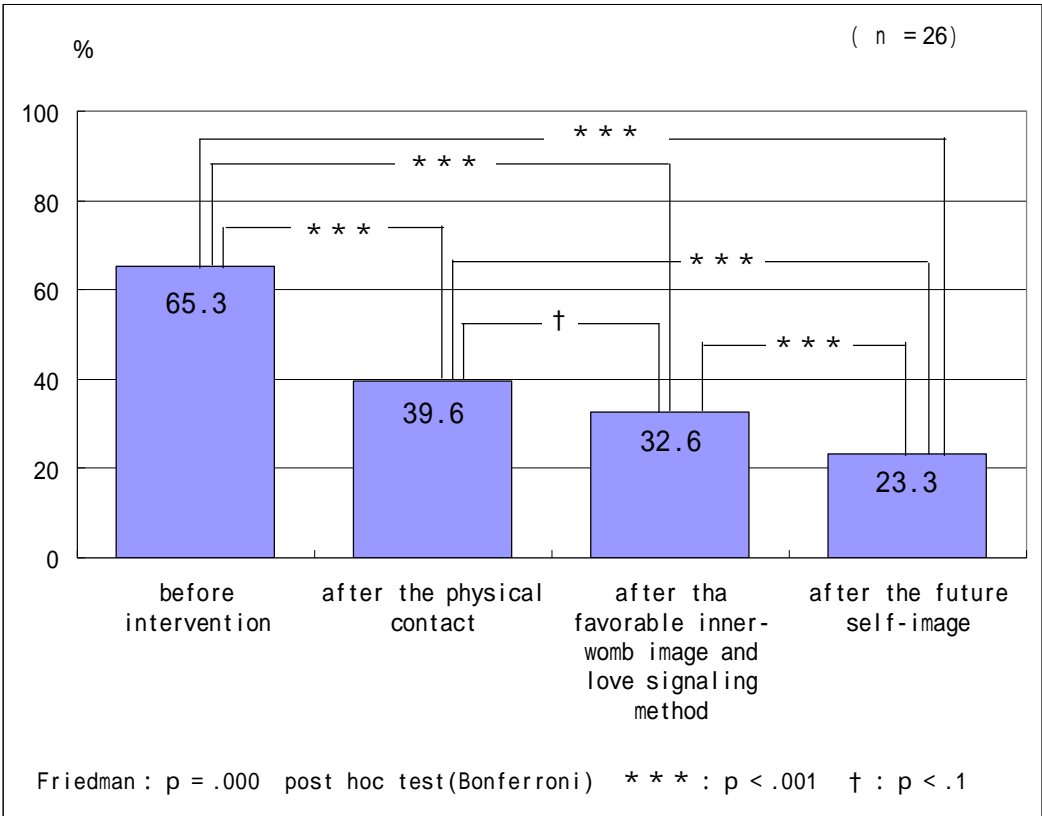
Changes in psychological traits around the time of the intervention are shown in Table 2. After the intervention, the average score rose significantly for self-esteem, family with perceived emotional support, other

than family, and child-care confidence, while the average score for depression and self-suppression behavioral traits tended to decline. However, no significant differences were found around the intervention for problem solving behavioral traits, interpersonal behavioral traits, anxiety traits, and child-care anxiety.

4. Changes in the subjective stress level during the intervention using the essential needs of soul support method.

Figure 1 shows the results of an assay of descriptions of stress levels the participants wrote down in the free description sheets distributed to them to determine the effect of the intervention on their subjective stress level around the time of the intervention. The average value of the subjective stress levels before the intervention declined significantly in each technique.

Figure 1 Changes in the subjective stress level during the intervention



5. Regarding the change in cortisol level in the saliva around the time of the intervention using the essential needs of soul support method

The cortisol level in the saliva was measured to ascertain the effects of the intervention around the time of the intervention. After the intervention with the essential needs of soul support method, the cortisol level in the saliva declined significantly (Table 2). Additionally, correlational analyses (Spearman) were conducted to observe the relationship between the cortisol level and the variation in the psychological traits around the time of the intervention ( $\rho=.440$   $p=.024$ ) and the variation in the child-care anxiety level ( $\rho=.404$   $p=.01$ )

6. Comparison of the psychological traits of child-rearing mothers in the intervention group and those in the non-intervention group before the intervention and three months after the intervention

With regard to the intervention group ( $n=16$ ) and the non-intervention group ( $n=7$ ), the average value of psychological traits before the intervention and three months after were compared. The age of the child-rearing mothers in the non-intervention group was significantly lower (intervention group: 32.131 [ $\pm 4.34$ ] years old; non-intervention group: 28.14 ( $\pm 2.4$ ) years old,  $p=0.21$ ). Before the intervention, the average child-care confidence level tended to be significantly higher for the non-intervention group ( $p=0.003$ ) and the average

depression level tended to be lower ( $p=0.56$ ). Three months after the intervention, no significant difference was observed between the two groups (for the scores obtained, see Tables 3 and 4).

Table 3 Change of the psychological traits in the intervention group before and three months after the intervention (n =16)

	Mean value			Friedman p-value	-	-
	before	after	three months after			
Self-esteem	5.13 (±2.94)	7.75 (±2.38)	6.56 (±2.58)	.000	p<.01	p<.01
Self-repression	10.13 (±3.38)	9.06 (±2.89)	9.31 (±2.92)	.601		
Emotional support network(family)	8.25 (±2.11)	9.25 (±1.81)	7.94 (±2.91)	.111		
Emotional support network(others)	7.69 (±2.94)	8.56 (±2.76)	7.75 (±3.53)	.067		
Problem-solving	10.25 (±3.36)	10.25 (±2.84)	10.13 (±4.67)	.645		
Interpersonal dependency	7.06 (±3.42)	6.63 (±3.67)	5.94 (±4.01)	.154		
Trait anxiety (STAI)	46.88 (±12.37)	44.25 (±12.20)	43.50 (±11.79)	.219		
Depression (SDS)	43.94 (±8.04)	40.38 (±7.50)	40.25 (±8.93)	.004	p<.05	p<.05
Child-care confidence	24.25 (±5.30)	28.38 (±4.84)	27.00 (±4.24)	.002	p<.01	p<.05
Child-care anxiety	25.38 (±7.11)	25.63 (±7.70)	24.13 (±6.89)	.442		

Table 4 Change of the psychological traits in the non-intervention group before and three months after the intervention (n = 7)

	Non-intervention group		
	Mean value before	Mean value three months after	p-value
Age of person in question	28.14 (± 2.04)		
Self-esteem	7.14 (± 2.27)	7.86 (± 2.41)	.059
Self-repression	9.71 (± 3.04)	9.57 (± 3.41)	1.000
Emotional support network(family)	9.43 (± 1.13)	9.57 (± 0.79)	.317
Emotional support network(others)	8.71 (± 2.63)	9.14 (± 1.57)	.317
Problem-solving	10.86 (± 1.46)	9.57 (± 1.72)	.202
Interpersonal dependency	5.43 (± 0.98)	7.14 (± 3.13)	.140
Trait anxiety (STAI)	41.86 (± 6.31)	37.86 (± 10.29)	.223
Depression (SDS)	36.71 (± 6.24)	36.00 (± 7.72)	.674
Child-care confidence	30.29 (± 2.93)	30.43 (± 3.46)	.891
Child-care anxiety	22.86 (± 5.40)	21.43 (± 6.73)	.352

#### 7. With regard to the extended effects for three months after the intervention

In order to measure the extended effects of intervention in the intervention group, the effects were measured before, immediately after, and three months after the intervention. Improvements in self esteem and child-care

confidence and decline in depression were sustained at a significant level for three months after the intervention (Table 3). In the non-intervention group, no significant change was observed (Table 4).

#### 8. Change in the mother's subjective stress level three months after the intervention

Table 5 shows (a) all the cases involving the subjective stress of child rearing written in the free-description

Table 5 Stresses mothers are aware of and changes after three months (n=16)

	Stresses mothers are aware of:	Three months later 3ヵ月後
Example 1	The mother had anxiety with regard to the independence of her child (toilet habits, changing of clothes, eating manners etc. Due to lack of support from other family members, the child depended totally on her resulting in the sense of having no free time of her own.	She tries not to reproach the child outright, has focuses of attention besides child-raising through reading newspapers and books during the child's napping. She feels now she is back to her old self and deals with the child without undue stress.
Example 2	The mother had anxiety about the child's relationship with other children in the daycare center, and about the child's development of motor abilities. When in a hassle, gets crabby if the child asked the same question over and over.	She tries to look at on the child's characteristics as positive as opposed to negative traits.
Example 3	The mother felt she wasn't taking good care of the elder child, because the younger one took so much time. Small things got on her nerves very easily. One reproach led to another and lost track of things. She got carried away often.	She can put herself in her child's shoes and takes a breather before scolding the child. Finds herself more affectionate toward the child. Has started to do something she always wanted to do. The adult course has prompted talk with her family, and gets more help now from them.
Example 4	The child played with its baby food and it got on the mother's nerves. Got distracted from household work. Lack of sleep.	She feels more secure in looking after the child. Gives a hug whenever the child comes near. When upset, magic words of love restores her to her love of the child.
Example 5	The younger child never stayed away from her, and that left very little time to look after the older one, which caused frustration on the mother's part. The older child wanted to be cuddled but tried not to show it and it broke her heart. She also worries the older child is under stress about it.	She gets help so she can be alone in the park or in town. She can listen to the child's talk without getting mad. Takes more care now than before to give praise to the child about what the child has accomplished. The husband looks after the younger child while the mother and the older child go out in town and have heart-to-heart talk so that the mother feels more secure.
Example 6	The mother has no confidence in child-raising. Tend to shout or slap when the child is disobedient. She feels she is not doing any positive thing for the child's inner development.	She takes a breather now before reproaching and stays away from slapping the child.
Example 7	The mother felt the boys were close in their ages that they quarrel often. When she is rushing things as in the morning, she got upset and scolded the children.	She tries to breathe deeply when upset, and tries to recall when she was little and loved by the parents. Tries also to be well rested in body and mind.
Example 8	The mother got very upset when the child made a mess or loud noises, especially when she was not feeling well. She feels at odds with her mother-in-law regarding how to raise a child.	Tries to have a breather before bursting into reproach. Tries not to shout at the child and ask the child what the child think is the problem. Feels now she is making progress toward really communicating with the child.
Example 9	The child is very particular about food. The child stays up late at night and sleeps till late in the morning so that early hours are never kept.	She now gets someone to look after the child so she can clean the rooms or go out shopping for distraction. When she gets mad, she makes up by giving kind words. She believes now that children gets wiser as they grow older. Feels relieved when she sees the child play with the child's grandparents.
Example 10	The child was a pest once the child starts to play outside the house. The child never wants to come inside the house. Usually takes a half hour and delays the household work. The mother got frustrated. The child stays up late and that cuts the mother's quiet time to her frustration.	The husband takes care of the child on weekends or the family go out to enjoy themselves. The mother tries not to get upset and give praise to the child. Tries to not to discourage the child to do whatever the child wants to do.
Example 11	The child's mannerism of words and behaviour were exactly the same as the mother's and it got on her nerves. When the child did not volunteer to help her or could not do things on his/her own, she tries to cajole or scold until the child started to cry. Sometimes slapped the child when the child is disobedient. The mother felt that the child did not care how she was feeling or how tired she was.	She now hugs her child when the child accomplished something, although the child is in grade school. She is now able to give encouraging words to the child. She can avoid now to get upset and is able to talk about the facts and her feelings without getting worked up.
Example 12	The asked the mother or grandmother to help with things the child can do on its own.	The mother tries to attend child-raising group. Asked her husband to read its handouts and now he has better understanding about stresses with regard to child-raising.
Example 13	The mother tended to get angry with the older child even when the child was not doing anything wrong. She blamed herself for it and added to the stress further.	She tries to improve the situation though cleaning up of her house or taking the child out with her, but basically the problems remain just as they were three months before.
Example 14	The mother's mother looked after her son only when she felt like it, not when the mother wanted her to. Sometimes the grandmother butts in when the child is enjoying itself without anybody near. The husband did whatever he wanted even while her pregnancy, such as golf, skiing, drinking parties. The mother felt she has been cutting down all her pleasures.	She is glad she took the consultation. The comments were detailed and to the point.
Example 15	The child got on the mother's nerves when the child asked her to do the same thing over and over again. Also, when the child was naughty and wouldn't listen to her caveat. And when the child was being mean to other children and they got angry at the child.	She now takes a breather before dealing with the situation. She feels she is more confident in looking after the child
Example 16	The mother always has the day's plan but the children's behaviour and mischiefs sometimes make things go awry, and that got on her nerves. The worry that the children might catch cold is a big stress inducer for the mother. The third and the youngest of the three made everything dirty with its hands and food.	She feels now she knew herself better. She feels sorry for herself because she was always getting upset. She wants to make the most of the courses she took.



sheets during the intervention using the essential needs of soul support model, and (b) the stress coping methods and changes in the mother's attitude toward the child described in the survey three-month after the intervention.

#### IV. Discussion

In this study, direct intervention of a group of child-rearing mothers was implemented by applying the SAT theory-based guidance method and the essential needs support method. The effects of the intervention was then examined, both quantitatively and qualitatively, on the basis of the changes in the psychological traits of the child-rearing mothers observed around the time of the intervention and three months after the intervention, as well as on the basis of the impressions they wrote down in the free-description sheets.

##### 1. Regarding the present state of child-rearing mothers

Child rearing is a regular part of life, but at the same time, it is said that a child-rearing mother is in a peculiar situation characterized by many stressors. Stress is perceived when things do not go as expected, and when a stress is perceived negatively, self control of feelings, behaviors and bodily functions declines, resulting in the appearance of somatic, behavioral and neurological symptoms.<sup>8)</sup>

The subjective stress that emerges from the free descriptions provided by the child-rearing mothers in the study shows neurological symptoms such as: "I get irritated when I compare my baby with other babies"; "I become irritated and lose my temper when my baby doesn't listen to me"; or "I become irritated when I can't do the household chores [because I have to take care of my baby]." The mothers' subjective stress is also

manifested in behavioral symptoms such as: "I get mad at my baby easily"; "I find myself shouting at my baby"; and "I often hit my baby." With regard to somatic symptoms, in the free description distributed during the intervention, the participants were asked write down where they felt most uncomfortable when they were under stress. Their answers contained a large range of symptoms including stiff shoulders, stomach ache, lower back problem and headache. From these stress symptoms, it is possible to infer that child-rearing mothers are under a lot of stress.

The self-esteem of mothers in this study was 6 points, and from the interpretation of this measure, <sup>21)</sup> mothers in this study have low self-esteem and negative self-image. And given that their average value for trait anxiety was 44 points, (which is considered high), while their average value for depression was 40 points, (which means they are in a light depression territory), it is hardly possible to say that the mothers in this study are in good mental health. It is can be assumed that the mothers' stress symptoms and poor mental health, conveyed either directly or indirectly through their expressions, tone of voice, attitude and so on, have a negative impact on their children. <sup>22) 32)</sup>

## 2. Regarding the intervention's short-term effects

After the intervention using the essential needs of support method, the self-esteem level, awareness of emotional support level and child-care confidence level were improved, while the self-repression level and depression level were lower.

Stress is closely related to the image of the situation that has triggered the stress. According to a report by Hashimoto et al, <sup>24)</sup> in image research it is said that when one has a good image of one's parents, one tends

to also have a good self-image, and good self-image is said to be conducive good mental health, but no study has been done to determine how self-image can be improved. Additionally, according to a study by Higuchi et al,<sup>25)</sup> there is evidence that having a positive image-script of one's parents has an effect of changing one's mental health in a favorable way. Group intervention was carried out in this study with the view to improving the participating mothers' self-image and the image of their parents by using the SAT physical contact method, favorable inner-womb image method, love signaling method, and future self-image method.

The somatosensory stimulus triggered by physical contact releases dopamine and serotonin from the brain, which in turn repress negative emotions and heighten the feeling of pleasure, thereby reducing stress.<sup>20)</sup> The SAT physical contact method used in carrying out the intervention of this study works directly on the pain and discomfort the body feels when it is under stress. First, the participants are instructed to form an image of the stress they currently feel and perceive the discomfort and pain felt by the body, and reduce the discomfort and pain by instinctively answering the question "What part of the body do you want me to stroke?" These steps activate the intuitive faculties of the brain's right hemisphere in a manner peculiar to the SAT method. Stroking the other party endearingly where she wants to be stroked and with the amount of force she desires releases serotonin in the brain, thereby easing the stress felt by the body. This reduction of the stress felt by the body is believed to be what enables the patient to feel psychologically good or relaxed. The level of subjective stress is reduced to its lowest level after the physical contact. The impressions the participants had after the physical contact included "I feel comfortable"; "I feel relaxed"; "I feel lighter"; and "I feel safe," suggesting that the intervention using the SAT physical contact method had the desired effects. It is believed that the support of others can be perceived by experiencing a feeling of comfortableness and feeling of security through the touch

by others, thus raising awareness of the emotional support being provided.

The awareness and emotions one has today are influenced by the past and future images that exist in the subconscious. One is unable to exercise self-control when one develops stress because there is a flashback of negative images stored in the mind.<sup>9)</sup> However, in the SAT theory-based guidance method or image therapy, support is provided to help patients modify their behaviors or achieve self-growth usually by urging them to recall images of past traumas and transform their negative image-scripts to positive ones. However, in the group intervention conducted for this study, the participants are urged to form a positive image-script from the inner-womb stage to the infant stage without having to recall past traumas by using the favorable inner-womb image method and love signaling method. Images represent cranial nerve activity patterns, and for the brain, whether the images are perceived images rooted in experience or imagined, and even if they contain different quantities of information, the path through which the brain is aroused is the same.<sup>9)</sup> That is to say, forming imagined images using the favorable inner-womb method and love signaling method enables one to freshly form cranial nerve activity patterns of positive images of being amply loved and accepted from the inner-womb period to the infant stage. Recalling an image of being loved in the past enables some people to change the image they have of their parents and even their own self images in a favorable way, thus in turn enabling them to improve their self esteem.

In addition, the present is also influenced by future images. If one is able to imagine the future in a positive way, one will also be able to perceive the present in a positive way.<sup>9)</sup> The future image method used in this study guides the child-rearing mother to imagine the future and form a fresh positive image-script based on that imagined image of the future. According to humanistic psychology,<sup>26) 27)</sup> human are by nature

autonomous beings with goals and values and are capable of self-determination, and mental health is realized in the process of self-realization. However, it is probably the case that the degree to which one is able to hold a favorable self-image plays a part in self-determination that makes self-realization possible. It is believed that by developing a positive image-script in which the future self is portrayed as free and self-confident, one is able to perceive the self in its true light and the self-image is changed in a favorable way, that is, in a way that shows the self able to choose a way of life that holds the self dearly, thereby improving one's mental health and lowering depression.

Earlier it was pointed out that the essential needs of soul support method is a support method that fulfills three basic needs. According to Munakata's soul development theory,<sup>28)</sup> the period between infant and later childhood is the period when one is recognized and loved by a significant other (fulfillment of the desire to be loved). Munakata cites the inability of one's parents, one's first significant others, to resolve the problems of self-repression and dependence of their souls as a factor that prevents resolution of problems that arise when one is an infant. Self-repression and reliance on others are formed by a feeling of being affection-deprived or receiving only conditional love (as opposed to unconditional love) in the process of growing up. That is to say, by not being loved unconditionally by one's significant others in the process of growing up, the parents themselves developed a proclivity to suppress their feelings and depend on others, which continued into their adulthood. The mother herself is designed to fulfill her desire to be loved because she is so worried about how others view her that she does not have her own standard of judgment, but has such a strong expectation of others that she lacks the confidence required for self-determination. Thus she is unable to give her children unconditional love, and finds herself shouting at them when they do not listen to her. The latter is a manifestation of her dependence

on her children. Properly speaking, the level of self-repression and dependence on others need to be lowered before these issues can be resolved. However, in this survey, although there was a tendency for the level of self-repression to become significantly lower, there was no change in the average score on the dependence of others measure.

One reason there was no clear change in the self-repression level is that no self-assertion training was provided. The actual amount of housework and work related to child-rearing did not change. Since the soul wants self-repression, even if the wife feels a desire to have her husband help in child-rearing, she concludes that she should not ask her husband to help. Because she is unable to ask, her desire to have her husband understand how hard it is to keep the house and at the same time raise children and the sense that she wants him to help remains unfulfilled. Moreover, limiting its objective to clarifying the nature of stress in child rearing, the survey clarified the impressions the participating mothers gave for each support method, their method of coping with stress and awareness of its presence, and in the process of clarifying these points, the participating mothers developed the skills for making physical contact with their children as a way of coping with stress. However, it is unclear whether the intensity of the feeling of dependence on others as expressed by their desire to get their toddlers to listen was completely reduced, although evidence suggests it remains. Thus it can be inferred that in this survey the score on the dependence on others measure did not change, and it can be expected that the level of self-repression and dependence on others may be lowered by repeatedly applying the essential needs of soul support method.

In this study, in order to measure the stress reduction effect of the essential needs of support method, the cortisol level in the saliva of the participating mothers was measured around the time of the intervention. The

standard cortisol level in the saliva is said to range in the vicinity of 0.03 to 0.2  $\mu$ g/dl with the level being high in the morning and low in the evening.<sup>10</sup> In this study, a quiet rest time was provided to eliminate the impact of the rise in the stress level at the time the participating mothers arrived at the health center. The cortisol level for each participant was measured at around 11 am (before intervention) and around 11 pm (after intervention). Thus the impact of the time of the day factor was kept to a minimum. The average cortisol level in the saliva of the participating mothers was 0.28  $\mu$ g/dl, suggesting that the mothers targeted in this study were under stress. The cortisol levels in their saliva were significantly lower after the intervention. In addition, a correlational analysis of the degree of change around the time of the intervention found a correlation between the degree of change in the trait anxiety level and the degree of change in the child-care anxiety level, suggesting that the essential needs of soul support method was effective in reducing the psychological stress of child-bearing mothers.

According to the contents of the descriptions entered in the free-description sheets distributed during the intervention using the essential of soul support method, the average subjective stress level before the intervention was 64.5%, but it declined to 39.6% after the physical contact intervention and to 32.6% after the application of the inner-womb image method. Then, after the future self-image method was applied, it declined significantly to 23.4%. As a result of these changes, together with the decline of the cortisol level in the saliva, it can be inferred that the intervention had an effect in reducing the stress perceived at the present. Moreover, since the individual techniques were all effective in reducing stress, intervention using one of the techniques is believed possible.

## 2. Regarding the extended effects of intervention

Quantitative changes in psychological traits and child-care confidence and quantitative changes in attitude toward children, both recorded three months after the intervention, as well as changes in stress levels achieved through the application of stress-coping methods were studied qualitatively. In the quantitative changes, improvements in self-esteem and child-care confidence as well as the declines in depression were sustained significantly. Around the time of the intervention, the child-care confidence level of the intervention group was significantly higher and their depression level was significantly lower, while mothers in the non-intervention group were caring for their children with more confidence and less stress. Three months after the intervention, the level of self-esteem tended to rise significantly in the non-intervention group, but there was no statistically significant difference between the two groups. It can be inferred from this that there was no significant difference precisely because significant improvements in self-esteem and child-care confidence and a significant decline in depression were both sustained among those in the non-intervention group. Moreover, changes in attitude toward one's children and changes in actions taken toward oneself could be inferred from the responses the child-rearing mothers gave in the questionnaire survey conducted three months after the intervention. This suggests that, based on quantitative and qualitative analyses of the data, the essential needs of support method has the extended effect of improving the levels of self-esteem and child-care confidence, thereby reducing child-rearing anxiety and stress of mothers.

The participating mothers said that they felt comfortable and safe after the intervention using the SAT physical contact. Given that the state of a mother's soul impacts her attitude toward child-rearing, Hashimoto S.<sup>29)</sup> states that child-rearing mothers should create an environment where their children can feel reassured and receive safe and unshakable love unconditionally by (i) sending out a lot of messages of unconditional love, (ii)



realizing their susceptibility to respond emotionally to suit their own convenience, and (iii) letting their children go through experiences that will fulfill the three basic desires of their soul. It is believed that to be able to send out safe and reassuring signals to their children, first of all, mothers need to be able to relax as when the physical contact method is applied. Moreover, although physical contact with babies, such as the post-delivery kangaroo care and touch care, are stressed, <sup>30)</sup> it is believed that knowing how good it feels to have physical contact enables mothers to hug their own children. However, in the questionnaire survey conducted three months after the intervention, the participating mothers said they changed their behavior, as in: "I hugged my daughter when she crawled close to my feet"; "I hug my daughter even though she's in school now."

Moreover, from the viewpoint of what Hashimoto S. terms "the ease with which mothers respond emotionally to suit their own convenience," <sup>29)</sup> it is significant that the participating mothers made such comments as: "I lose my temper, despite myself, and end up screaming at my baby"; "The more difficulty I have figuring out what's making me angry, the more angry I get"; and "When I'm inundated with housekeeping chores, I get irritated and find myself scolding my baby." But three months after the intervention, the same mothers showed behavioral modification, that is, changed the way they thought about their kids, the way they expressed their love for them, and how they accepted them into their heart. Here are some examples "I've learned to see things from my child's perspective. I pause to take breaths to control my anger and avoid unilaterally scolding him"; "My baby seems much cuter than before": "I'm more sensitive to my baby's needs now than I used to be." "When I'm about to lose my temper, I take a deep breath and recall my childhood days when I was really loved. I do my best to slow down and relax more."

The reason the intervention had positive effects may be that the significant rise in self-esteem level and

child-care confidence level, coupled with the significant reduction in depression level, enabled mothers to be more relaxed with their babies, thus rendering the interaction between mother and child more comforting. Additionally, as can be seen by the comment, "Recalling the words used in the love signaling method at a time when I was irritated enabled me to show real affection for my baby, which I couldn't do before," even when mothers had flashbacks of negative images, by repeatedly changing their attitude toward their children by applying the positive image-script formed in their minds further strengthened that active pattern and enabled mothers to continue forming the positive image-script even three months after the intervention.

Three months after the intervention, not only was there modification in the mothers' behavioral toward their babies, there was also modification in the mothers' behavior toward themselves. The mothers continued to behave in a way that placed importance on the self, as in "Now I'm interested in things other than raising my baby. When the baby's asleep, I read a newspaper or a book I've wanted to read. I've pulled myself together, so now, I can as a human being, calmly face my baby," or "I've taken up something I've always wanted to do." "I set aside time to be alone," or "For a change of air, I take my baby to a park or take her out with me." This suggests that undergoing the intervention using the future self-imagining method helped the mothers find what they really want to do, thus enabling them to modify their behavior.

It is believed that, thanks to these favorable behavioral modifications, the mothers in the intervention group were able to continue to direct their coping behavior at their children and at themselves, resulting in the continued improvement of self-esteem and child-care confidence, thereby enabling these mothers to continue lowering their depression level. Regarding child care anxiety, Kawai N. et al <sup>17)</sup> believes that, since mothers' psychosomatic condition is related to the psychosomatic condition of their children, their tendency to be anxious

about child-rearing is believed to originate in their lack of self-esteem and feeling of incompetence and helplessness. Kawai et al point out the necessity of intervention centering on assistance to mothers to develop a proper sense of motherhood, and it can be said that the essential needs of soul support method, which supports the change in lifestyle to one that places importance on the mother's attitude towards her child and herself by increasing her self-esteem and child-care confidence, is precisely the kind of support designed to assist mothers to develop such a sense of motherhood.

The foregoing discussion describes the extended effects of the essential needs of soul support method, but it is unreasonable to think that the method, as it is, will be effective for everyone. Consequently, for improving the essential needs of soul support method, it is important to examine the cases where mothers were not able to effect behavioral modifications either towards their child or toward themselves.

In case 12 of the analysis conducted three months after the intervention, the mother remarked, "I had my husband read the description I wrote down. I think that helped him understand why I was so stressed out caring for our baby." But the mother did not say that the intervention helped change their behavior toward themselves or their children. In case 13, the mother said, "The situation has not changed," showing that the intervention was not effective. The psychological traits that characterize case 12 were: low levels of self-esteem, emotional support awareness, child-care confidence, and high levels of self-repression, problem avoidance, reliance on others, trait anxiety, depression, and child-care anxiety. An infant treated for a psychogenetic visual impairment is cited in a study undertaken by Higuchi N. et al. <sup>25)</sup> Right after the treatment, the mother showed some signs of improvement, but later relapsed. She manifested the following characteristics: a high level of anxiety, self-repression, and reliance on others, and a low level of self-esteem and support awareness. These are the

characteristics of mothers who did not show any extended effects three months after the intervention, but they resemble those observed in case 12. The mother in case 12 wrote down in her free-description sheet, "I recall being alone as a child," suggesting that she has a negative image of her parents as she grew up.

The psychological traits that characterize case 13 were: a low level of reliance on other and a high level of problem avoidance, and a low level of child-care confidence. The mother acts in ways that avoid problem solving, as in: "I'm overwhelmed by what I have to do every day" and "I clean the house just to relieve stress, or take my baby out to a department store or the like where we just walk around." Here, the mother seems neither to understand nor accept how the child feels, as when she says, "I gets emotional and take it out on my kid." In her free-description sheet, the mother remarks, "I end up recalling my real parents and the environment I grew up in, and marvel at how lucky babies are when they are brought into this world by parents who love them as depicted by this image," reflecting the negative image she has of her parents.

Common to these two cases where neither mothers got good results from the intervention is that they both have negative images of their parents in the environment they grew up in, and frequently resort to problem avoidance. The high level of problem avoidance means that these mothers are so anxious about child-rearing that they are unable look straight at the problems. As a result, they are susceptible to becoming excessively optimistic and are likely to turn their backs on reality on regular basis.<sup>31)</sup>

From the foregoing discussion, the method of intervention adopted in this study by itself is believed to be inadequate to enable parents to solve their child-rearing problems if they have strong negative images of themselves going back when they were very young, including when they were in their mothers' womb, and lack the strength to look straight at and solve the problems they face. For children's soul to develop, it is important

give them experience receiving ample amount of love during their fetal life and infancy. However, the love they get from their parents must be unconditional love. To provide a safe and secured environment for their children to grow in, mothers must be able to care for them with tender love. <sup>29)</sup> Those mothers participating in this study for whom the essential needs of support method proved effective apparently all had traumatic experiences hidden in their subconsciousness.

In individual counseling cases, counseling provided is designed to meet the needs of the individual client, but since this study targeted groups rather than individuals, the intervention could not be customized to meet the needs of individual participants. Using the essential needs of soul support method, together with the personalized SAT-based therapy support, was deemed effective in addressing the shortcomings of applying the essential needs of soul support method to groups.

## V. Conclusions

1. After the intervention, the essential needs of soul support method used to provide guidance for child-rearing mothers proved effective in significantly raising their self-esteem level, support awareness level and child-care confidence level, and significantly lowering their depression level, cortisol level of the saliva and subjective stress level.

2. Three months after the intervention, the extended effects were favorable behavioral modifications towards one's children and towards oneself, higher levels of self-esteem and child-care confidence, and a lower depression level.

3. The essential needs of soul support method using positive image-scripts based on quantitative and qualitative data analyses is believed to be effective in reducing stress borne by child-rearing mothers and improving their confidence in caring for their children.

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