

## Attempts to Implement a Program to Promote Co-Parenting for Couples in the Parenting Phase

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### Abstract

This study examined the effects of a program designed to promote cooperation in child-rearing between married couples (couple parenting) by attempting to implement the program on married couples in the child-rearing stage of their child's life. Additionally, the concept of "the effect of husband's participation in education" was examined through the program to determine whether husbands became more cooperative in child-rearing, housework, and so on, and whether the couples' perception of parenting subscale items "mutual emotional support", "mutual concrete support", "mutual", difficulties in sharing responsibility", and "parenting agreement and negotiation" were examined for changes. Four consecutive surveys on married couples were administered to men (fathers) and women (mothers) who had cooperated in a previous survey on child care for married couples. Ninety-four couples (age: husband,  $36 \pm 3.1$  years; wife,  $35 \pm 2.9$  years) who had implemented the program were included in the analysis. The change in the post-impression scale scores, based on the awareness of program implementation, commitment, and program implementation status, was significantly higher in the low group and lower in the high group. Based on these findings, the program was verified and examined. Furthermore, the presence or absence of that idea was significantly related to the couple parenting perception scale score in 7 out of the 20 items that husbands considered as "husband's participation in education". Additionally, the number of household chores performed by husbands was significantly higher in the high or middle group than in the low group based on the marital parenting recognition score.

**Keywords:** Co-Parenting; Child Care; Perception; Housework

### Introduction

Research on co-parenting has been conducted since the 1990s in the US, where it has been widely considered as an act shared by multiple caregivers who are responsible for the care and nurture of their child, to explore how parents perform their parental roles together [1,2]. In Japan, it has been 10 years since co-parenting was introduced as another framework in parenting research [3]. Support for fathers has been further examined from support for mothers [4] and currently, much attention is being paid to the importance of parenting by couples working together, or couple parenting. Couple parenting reportedly has a positive effect on depressive symptoms [5], increases child-rearing happiness, reduces child-rearing stress [6,7], increases parenting time, and promotes parenting behavior [7]. Previously, we also attempted to develop a shortened version of the Couple Parenting Recognition Scale, which provides important suggestions for the creation of a plan to promote couple parenting and its evaluation. It was possible to identify directions for support using a shortened

version of the scale, consisting of 15 items, with the following four subscale items: “mutual emotional support”, “mutual concrete support”, “parenting agreement and negotiation”, and “difficulty in sharing responsibility”, which is a negative factor.

Article 10 of Japan’s Fundamental Law of Education states that “parents and other guardians have the primary responsibility for the education of their children and shall endeavor to help them acquire the habits necessary for life, foster their independence, and promote the harmonious development of mind and body. Family education is the basis of education for children” [8]. We believe that it is an important perspective for couples to help each other raise their children together. In other words, apart from simply sharing housework and childcare, it is important to educate and nurture children as one person. Promoting conjugal parenting, which enhances the bond between husband and wife, is an indispensable act for the growth of their children. Contrarily, postpartum crisis has been attracting much attention among couples in the child-rearing stage. In this situation, child-rearing starts even if the wife is exhausted both mentally and physically from childbirth, and the child needs life-threatening care, which sometimes causes mental strain. In Japan, the rate of childcare leave is gradually increasing, but it is still considered low, and husbands continue to go to work even after the birth of their children, leaving childcare basically to their wives. This makes wives to hesitate from entrusting their precious children to husbands who sometimes do not take the initiative in child-rearing; as a result, husbands find their children cute but their wives tense and difficult to deal with, and wives feel distrustful toward such husbands and stressed out. As this situation continues and mutual affection cools, the couple’s marital relationship deteriorates so rapidly after childbirth, even to the point of considering divorce. The characteristics of a couple’s failing relationship include the following: little communication, little common ground, poor relations with in-laws, lack of trust, many petty fights, not greeting each other, and lack of compassion and appreciation; the most common time for couples to divorce is when their children are aged < 5 years [9,10].

Couple parenting has been studied abroad as post-divorce parenting for couples [11,12], especially as a family court program, The Cafcass positive co-parenting programme (CPPP) [13], co-parenting for resilience CRSS [14] and mandatory co-parenting programme (CPP) [15]. In Japan, discussions on custody have been at a standstill and studies on post-divorce marital parenting are only few [12]. In this context, there are high expectations for efforts to promote couple parenting during the child-rearing period. In Japan, a programmed intervention study for pregnant couples by the Tohoku university co-parenting research team [16] is being promoted. Furthermore, an intervention program for pregnant couples is also being examined, with 1 - 3 scenes set to be thought about and performed by the couple during pregnancy [17].

### Aim of the Study

In the present study, we aimed to evaluate the effectiveness of an intervention program designed to promote parenting among parenting couples in the postpartum crisis period, as a step toward a further study of the program. Specifically, the purpose of this study was to develop a plan to promote couple parenting and to examine the effects of our intervention.

### Research Methods

#### Creation of intervention programs

Based on a 15-item, four-factor couple’s perceptions of parenting scale [18], which includes four items on “mutual emotional support”, four items on “mutual specific support”, three items on “parenting agreement and negotiation”, and four items on “difficulties in sharing responsibility”, programs 1 to 4 were created to be addressed by the couple based on four perspectives. The specific aims and contents are shown in table 1.

#### Survey method

The program was presented and requested to be conducted in addition to a questionnaire survey via Internet research (Freeasy, an academic research organization).

Table 1. Program contents

Four perspectives	Aim	Contents
Program 1	Worry about	Especially in the morning, greet them with a bright smile and get a grasp of how they are normally doing.
Mutual emotional support	Know what you want.	Say and listen to your true feelings to eliminate anxiety, frustration, and worry.
	Be considerate	Treat them warmly and with compassion
	Listen to someone's story	Understanding and knowing how the other person feels
Program 2	Help with housework and childcare naturally	Think from the other person's point of view and cooperate with hard work and effort
Specific support for each other		I'll take the initiative. I'll remember to say thank you.
	Help and care to avoid	Talk to them and ask them if they are in trouble
	Always think of better ways to do things with motivation	Ask if they are stressed out or exhausted
	Cooperate in everything without complaining	Reflect on your actions and words. Let them know you're willing to help and work with them as much as possible.
Program 3	Don't leave things in place that impede marital cooperation	We have different values and priorities, but we don't have to agree on everything; instead, we just need to respect each other.
Difficulty in sharing responsibility		I don't need to criticize or equate them, just try to respect them.
		If I'm concerned about any new difficulties, I'll discuss them with you. It's okay to fight.
Program 4	Make time for the couple, make an effort	We pay attention to each other and talk to each other on the spot and on the day arguments occurred.
Parenting agreement and negotiation	If you don't tell them, they won't know.	Communicate your feelings, opinions, and so on in words
	A relationship where you can talk about anything and fight, but it won't break you.	
	Communicate with each other	Listen to and report the other party's opinion when entrusted to do so
	Share information	

### Survey participants

Men and women who participated in the married-couple cooperative child care survey in April 2023 were considered as married-couple pairs, including their spouses. The survey on cooperative child-rearing by couples consisted of fathers and mothers raising children aged < 5 years without bereavement or divorce, aged between 27 and 39 years, and surveyed in Aichi, Hiroshima, Saitama, Shizuoka, Chiba, Osaka, Tokyo, Fukuoka, Hyogo, and Hokkaido, the prefectures with the highest number of children.

### Survey summary

The program's effectiveness was verified through a four-question survey, which was conducted on the husbands and wives, and it was explained to the respondents that they were required to answer in pairs and that they would share the same information terminal (personal computer or smartphone). The next survey request was made to those who responded as a couple, and those cases of dishonest responses were excluded from the survey each time. The duration of each survey was 2 weeks.

The program was implemented as a third survey, and an image describing the program and its key points was uploaded. The respondents were encouraged to implement the program for 1 week. The evaluation of the program, impressions, opinions, and suggestions, as well as the evaluation of the couple’s perception of parenting and the husband’s collaboration in housework and childcare were conducted as a fourth survey, at approximately 10 days after the implementation. The number of four surveys, survey period, and the number of surveys collected are shown in table 2.

Survey contents

The four surveys are shown in table 2.

Table 2. Survey period and content

survey	Web survey Delivery	Number of copies printed	Answer.	Survey period Survey contents	Method of response	(Number of platelets)	
1st	Woman (Wife) Male (Husband)	77	November 17, 2023 – November 30, 2023			46	
		170	November 22, 2023 – December 01, 2023			107	
		Wife/Husband	Short version of the Marital Parenting Recognition Scale		5-Point scale		
		That (something mentioned before which is distant psychologically or in terms of time)	Whether or not the respondents agree with the concept of the 20 items of the husband’s educational and participation effects.		Two alternatives		
		Pair of objects, one larger (for man), one smaller (for woman)	Influences on the way of thinking about childcare and the state of the couple		Free-text entry (e.g. in online forms)		
2nd	Male/Female	149	December 08, 2023 – December 21, 2023			126	
			Pair of objects, one larger (for man), one smaller (for woman)	Reflection on Program 1 with 10 Questions		Select one of six items	
			Pair of objects, one larger (for man), one smaller (for woman)	11 items for discussion regarding Program 2		I’ll ✓ it when I get there.	
		Pair of objects, one larger (for man), one smaller (for woman)	Program 3: Discussion on perceived obstacles, solutions, etc.		free-text entry (e.g. in online forms)		
3rd	Male/Female	126	December 22, 2023 – January 04, 2024			113	
			Pair of objects, one larger (for man), one smaller (for woman)	Degree of reflection on Programs 4 and 3 items		5-point scale	
			Pair of objects, one larger (for man), one smaller (for woman)	Confirmation of the aims and main points of Programs 1-4		✓ when confirmed.	
	Wife/Husband	Consciously run the program for about a week after confirming the contents of the program.		Intervention			
		Presentation of images describing the program					
4th.	Male/Female	113	Jan 12, 2024 – Jan 25, 2024			100	
			Wife/Husband	Assessment of awareness of program execution with 13 questions		Select one of six items	
			Wife/Husband	Program Approach and Suggestions		Select the appropriate item	
			Wife/Husband	Impressions, evaluations, suggestions, etc. after the program		Description	
			Wife/Husband	Short version of the Marital Parenting Recognition Scale		5-Point scale	
		Pair of objects, one larger (for man), one smaller (for woman)	50 housework and childcare assignments and selection of housework items to be performed by the confirmed husband.		Select the appropriate item		

\*About the answers Wife/Husband: each answered Wife/Husband: each answered Husband and wife; they discussed together and answered Number of men: 170 men were included in the analysis of the first survey due to the small number of women surveyed.

### Scales and items used in the survey

#### Abbreviated version of the marital parenting recognition scale

The couple parenting perceptions scale is a 29-item scale that is used to gather data on the perceptions of the couple's cooperation in child-rearing. The scale consists of the following four subscales: "consideration and appreciation for the other person", "communication between the couple", and "things that hinder couple parenting" (18). Subsequently, a survey was conducted using the couple parenting perceptions scale, and a confirmatory factor analysis revealed that the number of factor names and items (Cronbach's alpha coefficient) were "mutual emotional support", four items (0.84); "mutual concrete support", four items (0.84); "mutual emotional support", four items (0.84), and "mutual concrete support", four items (0.84), "parenting agreement and negotiation", three items (0.73), and "difficulties in sharing responsibilities", four items (0.77). The scale was designed as a short version of the marital parenting recognition scale (6) consisting of 15 items and four factors. Each item was rated on a 5-point scale from "1", indicating "does not apply to me" to "5", indicating "does apply to me", and the higher the score, the higher the couple's perception of parenting in child-rearing.

#### Twenty Items from the children's learning lab

The "father effect" was higher than expected. Fathers' participation in education influences children's growth (kodomo-manabi-labo.net, HP). In fact, 20 items from the fathers' participation in education influences children's growth, [Kodomo Manabi-Labo], and whether or not their husbands agreed with the idea were selected as applicable items.

#### Analysis method

The responses to all four surveys were included in the analysis, and the changes in subscale scores of the shortened version of the Marital Parenting Recognition Scale were examined separately for wives and husbands, focusing on the groups with low (25<sup>th</sup> percentile) and high (75<sup>th</sup> percentile) total subscale scores.

The negative factor "difficulty in sharing responsibility" of the marital parenting perceptions subscale was reversed. The changes before and after the program were examined by Wilcoxon signed-rank test, and the comparison of the two groups was performed by Mann-Whitney's U test, Spearman's correlation, nonparametric tests, and cross tabulation  $\chi^2$  test for association. The comments on the program implementation were analyzed to synthesize the results and examine the program's effectiveness and improvement.

#### Ethical considerations

The request for the survey clearly stated that study participation was voluntary. Moreover, it also stated that there would be no disadvantage in the case of withdrawal during the survey. In the questionnaire survey, a check box was provided to confirm the intention of providing consent. The study was reviewed by the Research Ethics Committee of Nagoya University of Arts and Sciences (Approval No. 621, Approval date: October 28, 2022).

#### Result

The response rate was 59.7% (46/77) for the women in the first round, 62.9% (107/170) for men, 84.6% (126/149) for in the second round, 89.7% (113/126) for in the third round, and 88.5% (100/113) for in the fourth round. Altogether, 94 couples (94 husbands, 36 ± 3.1 years; 94 wives, 35 ± 2.9 years) with valid responses in four rounds were included in the analysis.

#### Status of program-related initiatives

##### Consciousness

Thirteen questions were asked on the four subscale items, and the level of awareness was scored as follows: 1 point for not aware, 2 points for a little aware, 3 points for aware, and 4 points for very aware. There were significant differences between the groups in their

level of awareness of the program, and it cannot be said that they were all aware of the program under the same conditions (Table 3). The husbands, particularly, showed a high level of awareness in all items.

Table 3. Comparison of program execution awareness among the low, middle, and high groups

Awareness item	Low group		Middle group		High group		p	Multiple comparisons	
	Mean	median	Mean	median	Mean	median			
Wife	Program 1	1.8	1.8	2.02	1.75	2.2	2.1	.39	
	Program 2	1.8	1.5	2.01	2.00	2.4	2.5	.02 *	low<high .024
	Program 3	1.8	1.7	2.01	2.00	2.4	2.5	.04 *	low<high .039
	Program 4	1.9	2.0	2.21	2.00	2.5	2.3	.66	
That (something mentioned before which is distant psychologically or in terms of time)	Program 1	2.0	2.0	2.02	2.00	2.7	2.5	.00	** Low<High .030 Medium<High .030
	Program 2	1.9	1.9	2.14	2.25	2.7	2.8	.00	** Low<High .001 Medium<High .039
	Program 3	1.9	2.0	2.10	2.00	2.7	2.7	.01 *	low<high .012
	Program 4	0.2	0.0	0.43	0.50	0.6	0.5	.01 *	low<high .010

Kruskal-Wallis test \*p < .05

Multiple comparisons: Bonferroni; \*p < .05

### Approach

How were they made aware of the items that they should be aware of [41 case].

The most common responses were as follows: “We called out to each other to be aware (32 case)”, “We decided on the number of items to be aware of each day (29 case)”, “We were aware of the items that came to mind (28 case)”, “We were only aware of the items we should be aware of (25 case)”, “We were aware of the order of the items (23 case)”, and “We were aware of each program number (1-4) (22 case). The respondents were asked to what extent they were aware of the program and had the following responses: “It was difficult to be aware of the program (25 case)”, “I was able aware of the program every day for about a week (22 case )”, “I lost track of what to be aware of during the program (13 case)”, “I was aware of the program for 3 to 4 days (12 case)”, “I was aware of the program for approximately 5 to 6 days (9 case)”, and “I was aware of the program for 1 to 2 days (7 case). The respondents who chose “I think it is good to be aware of the program during marriage (36 case)”, “I think it is good to be aware of the program during pregnancy (10 case)”, and “I think it is good to be aware of the program after giving birth (9 case)” as to when they should implement the program or check the items, were “I think one item a day is easy to be aware of the program (15 case)”, and “I think it is good to be aware of the program regularly (15 case)”, “I think it is good to do it regularly and have a checklist (14 case)”, “I think it is good to have a combination of displaying items, an itinerary, and regular checks (12 case)”, “I think it is good to have an itinerary and a Oor× format (10 case)”, and “It is good to just display items (7 case). Thus, opinions on the implementation of the program were expressed.

### Program implementation status

#### Program 1

When couples discussed whether or not they should be conscious of the 10 items, such as consideration and appreciation for the other person, significantly a greater number of couples in the low group said they should be conscious of these items (p < 0.01~0.05) (Table 4).

Table 4. Items that couples should be aware of looking back

	Low group			Large herd		
	You don't have to do it.	You should be aware of this.	p	You don't have to do it.	You should be aware of this.	p
1. Greet each other with a "thank you," a smile, and a cheerful voice, without forgetting to thank each other	8	16	.102	10	15	.317
2. Thinking from the other person's point of view and seeing the other person's hardships and efforts, I inevitably want to help them.	7	17	.041 *	10	15	.317
3. Care about their families, who are an essential part of their lives	8	16	.102	11	14	.549
4. They cherish their time together, even if it is short, but they make time for just	6	18	.014 *	10	15	.317
5. To eliminate anxiety, dissatisfaction, and worry, we can say to each other what we really feel.	9	15	.221	11	14	.549
6. Warmly treat people, especially those who are suffering, as if they were their own, and feel with them and cherish them.	3	21	.000 **	13	12	.841
7. Listens attentively to others in an effort to understand them	5	19	.004 **	12	13	.841
8. Expresses his/her feelings in words such as "thank you," "it's delicious," "it's beautiful," "I love you," and other compliments	6	18	.014 *	9	16	.162
9. As a parent, establish basic lifestyle and home environment, and share responsibilities and roles	5	19	.004 **	10	15	.317
10. Cares about his family and knows how they are doing	6	18	.014 *	13	12	.841

High group, N = 25; Low group, N = 24

Nonparametric chi-squared test

### Program 2

The couple held discussions as specific support. The efforts were mainly discussions, with the topics to be discussed indicated in red. The content of the discussions are then described, and the instructions to express their opinions and feelings to each other, to exchange their opinions, and so on, were also provided. Except for the instruction to "discuss", the listeners were supposed to silently listen only. The discussion is judged based on the atmosphere and other circumstances of the situation, and the next step is instructed to be carried out. Although discussions should take a certain amount of time, a note indicating that each discussion should last approximately 5 minutes was added, taking into account the web responses. After confirming the theme and going over the content, a check (✓) mark was given.

### Program 3

In the description of perceived inhibition and solutions, 50% of the couples (13, 17, and 17 couples in the low, middle, and high groups, respectively) responded that there was no inhibition.

A description of the actual inhibition and its solution is shown in table 5. In addition to that, there are also

"I think it's important to cooperate with each other", "We can't solve problems without cooperation", "I think it's important to cooperate with each other", "We communicate clearly what we want to say", "Communication", "We care about each other", "We feel good about each other", "We discuss everything", "We verbally check each other's progress on chores and tasks we are working on and what our next actions are", "We are trying to communicate what we are thinking and what we want We are increasing the number of things we share as a couple", "Let's try to communicate with each other what we are thinking and what we want", "Let's discuss what we can do as a couple with respect to what our children want to do", "What we both want our children to become", "It is important to understand and respect each other's values", and many other solutions. It is important to understand and respect each other's values. Thus, solutions to the problems in the program were discussed.

Table 5. Actual situation of inhibition and measures taken to resolve it

	Group	Feeling inhibited	The solution
Cooperation	low	I can't do it alone.	Find out that we would do it together, not just one of us.
	during (a certain time when one did or is doing something)	I'm so busy at work that I'm exhausted when I get home.	Divide the workload and give yourself more leeway.
	during (a certain time when one did or is doing something)	Limitations of mutual capability	Understand each other's limits
	amount of money	My husband's business trips have increased, and when my child has a fever, it is very difficult for me to take care of my child by myself	
Hours	during (a certain time when one did or is doing something)	We have less time to talk, we can't make time for the two of us anymore.	Make a conscious effort to make time to talk, even if it's just a few minutes a day.
	during (a certain time when one did or is doing something)	Husband works late, so it's hard to find time for the two of them.	
	during (a certain time when one did or is doing something)	We don't have time to discuss it.	
	during (a certain time when one did or is doing something)	Working alone; spending time together is very limited. Children want to be pampered by their parents, and they also want to spend time together as a couple. Time is limited.	Leave the child with someone else once in a while to have some time together as a couple. Give the father and child some time to be together and satisfy the child's needs.
	amount of money	Insufficient time. Difficult for the couple to have sufficient sleep	
Housework	low	It's time-consuming to hang laundry out to dry	Just make sure it has a drying function.
	low	Husband is good at shifting blame. He won't admit to doing anything wrong	Have a supportive family. Telling them how they feel and making them aware of what they're going through.
	low	Not understanding and listening carefully to what his wife is saying.	Write down what you are told in a notebook and review what you have written many times.
	during (a certain time when one did or is doing something)	Household chores are inappropriately	
	low	Room is too cluttered.	We all want to split up the cleaning chores.
	low	You don't know where you put things away.	
	amount of money	My wife doesn't throw away things that need to be thrown away.	People who notice will throw it away.
Childcare	during (a certain time when one did or is doing something)	The situation continues to be unorganized. Child scatters things of his own volition and is more disorganized than before	How to make tidying up fun for children. Parents take the initiative to clean up and set a good example
	during (a certain time when one did or is doing something)	Not sharing information about school or community events. Mutual conflicts in schedules	Work hard to resolve this issue through information sharing applications and other means.
	low	Parenting concerns or worries about what to do	The couple will discuss it later that day.
	low	Different policies for raising	We are trying to do it in the same direction.
The rest	low	Money should be discussed properly.	
	low	Mother-in-law	
	during (a certain time when one did or is doing something)	My husband is from a different country, so I don't understand Japanese (conversing in English). I can't communicate well in Japanese and there is cultural differences	
	amount of money		
Nil	low	13 (13.7%)	
	during (a certain time when one did or is doing something)	17 (17.9%)	
	amount of money	17 (17.10%)	

**Program 4**

Couples were asked to discuss the extent to which they communicate with each other. The numbers of couples who engaged in any discussion were 81 (86.2%) for "1. Conversation and discussion on the spot or on the day about anything, including daily household chores, childcare, and events of the day at home", and 74 (78.7%) for "2". Moreover, 74 (78.7%) couples said that they "3. Ask each other's opinions, report, and discuss issues thoroughly without dwelling on them", and 80 (85.1%) couples discussed issues.



**Impressions of the program**

The program received many positive comments, including “it is a good initiative” and “the relationship between husband and wife has improved”, as well as negative comments such as “it is difficult to act consciously” and “in the end, people will not naturally try to help unless they are cooperative. You have to experience to understand how hard it is to raise a child, and in fact, work is much easier than childcare”. Table 5 shows the comments and table 6 displays their impressions.

Table 6. Impressions of the program

Category	Number of descriptions	Description
Program	76	I was able to act by being aware of it I think we made a good effort It was easy to understand 3 A chance to reconsider3. I learned a lot about items I hadn't thought about3 It was a little tedious, but it helped. I can be aware of things I normally can't. I also think we could have had a better time being aware of it. I would like to be able to do this on a regular basis without being conscious of it3. I'm usually busy, but I try to be aware of it to keep things amicable. For couples who live in different time zones, couples who work together, and newlyweds who will be sharing their values, I felt that this would be a good opportunity for communication, mutual understanding, and cooperation. Too busy to implement9. Difficult to be aware of8. Difficult to remember3 Tired and attentive 3; I still don't understand it well enough. I wish I had noticed it earlier, and we both recognize it. We clashed over minor things and couldn't do as much as we would have liked. I sometimes lost motivation because I thought I was aware of what I was doing, but often the other person didn't get it. I'm not motivated to do this or that if it's manual. I don't really understand the significance of the program because it's all so obvious to the couple. I figured that if both spouses were aware and considerate of each other's whole lives, there wouldn't be much need for special programs. There was no particular change.
conjugal relations	11	We have a good relationship4. 2 that led to a change in our relationship. It gave me a chance to try to get to know the other person and I was able to notice things that I normally didn't notice. I got to know my wife better. More time for marital bliss. It was a plus to realize that when I'm busy at work, I tend to have less time to pay attention to my wife's feelings.
Compassion and Gratitude	8	I was able to consider the feelings of others2 I'm glad I was able to be conscious of my own behavior and remember to be considerate of each other. I'm glad I was able to do it, despite my busy everyday life; to grow a little bit of a heart to care for others. I think I know how hard and painful it is to raise a child, and, at the same time, I understand how hard it is for a wife and how cute the kids are even more. I am now able to do the things I normally do, but by being aware of them, I am able to be more approachable to others and choose my words more carefully. Gently done. I've learned to treat people without getting emotional.
Desire to help and action	5	It would be very helpful if you could keep this up all the time, which I was more than usually aware of and responsive to. When I came home after work, instead of asking what I was going to do, I started to do childcare, housework, etc. I thought I knew how hard it was to raise a child, but I still had a lot to learn. I used to separate things in household chores by sex, but I changed this mindset, which allowed me to easier complete household tasks. I want to remind myself from time to time to be considerate of each other and to participate in housework and childcare, because it is easy to forget as time goes by.
Marital Communication	14	Increased communication skills2. We started talking about it6. It's a great conversation starter for couples. I thought it was a good initiative to increase conversation, since I had naturally been talking less since I got married. I hope that communication between the couple will be smoother in the future. The couple started to have more conversations and became more aware of each other's thoughts. I'm glad we took the time to talk about childcare, unlike our usual conversations.
Impediments to conjugal cooperation	10	I've learned to respect the other person. Mental strain was reduced by listening to each other's ideas and matching perceptions. I feel like I have a deeper understanding of the other person's values through the program. I understand the difference of opinion; It's hard to know how people feel I felt it was not easy to change the ways we spent our time or how we handle our relationships. After all, if you are not a cooperative person, people will not naturally try to help you! I've had people tell me that it's harder to work than to raise a child. The number after the description is the number of descriptions.

**Effects of the changes in a shortened version of the marital parenting perception scale**

Cronbach's alpha coefficients were calculated to confirm the reliability of the scales used in the effectiveness testing. Reliability was determined to be high for “emotional support” at 0.87 to 0.91, “concrete support” at 0.80 to 0.88, “parenting agreement and negotiation” at 0.78 to 0.87, and “sharing and difficulty (reverse)” at 0.76 to 0.89. The added mean scores were analyzed as scale scores.

The changes in the scores on the Cognitive Scale of Married Couple Parenting after the program was implemented showed significant increases in the scores of "emotional support" and "concrete support" for the husbands and "agreement and negotiation" for the wives in the low group. In the high group, both wives and husbands decreased in "emotional support," "concrete support," "agreement and negotiation," and "sharing and difficulties." (Table 7).

Table 7. changes in the Couple Parenting Perceptions subscale as a result of program implementation

		Before Program Execution					post program execution						
		N	MEAN	percentile			MEAN	median	percentile			p	
				25	50	75			25	50	75		
wife	lower group	Emotional Support	2.65	2.75	2.25	2.75	2.88	2.84	3.00	2.25	3.00	3.50	.266
		Specific Support	2.63	2.75	2.38	2.75	3.00	2.83	3.00	2.50	3.00	3.25	.169
		Agreements and Negotiations	2.62	2.67	2.33	2.67	3.00	3.05	3.00	2.50	3.00	3.67	.006*
		Sharing and Difficulties	2.93	3.00	2.63	3.00	3.25	3.10	3.00	2.50	3.00	3.63	.157
	the middle group	Emotional Support	3.62	3.50	3.25	3.50	4.00	3.56	3.50	3.00	3.50	4.00	.656
		Specific Support	3.31	3.25	3.00	3.25	3.75	3.39	3.50	3.00	3.50	3.75	.738
		Agreements and Negotiations	3.55	3.67	3.00	3.67	4.00	3.49	3.67	3.00	3.67	4.00	.516
		Sharing and Difficulties	3.16	3.00	2.75	3.00	3.50	3.10	3.00	2.50	3.00	3.75	.731
	large herd	Emotional Support	4.43	4.50	4.00	4.50	4.75	4.11	4.00	3.75	4.00	4.75	.018*
		Specific Support	4.37	4.25	4.00	4.25	4.75	4.06	4.00	3.69	4.00	4.50	.036*
		Agreements and Negotiations	4.27	4.17	4.00	4.17	4.67	3.88	4.00	3.33	4.00	4.33	.005**
		Sharing and Difficulties	3.59	4.00	2.44	4.00	4.75	3.04	2.88	2.00	2.88	4.25	.120
that (something mentioned before which is distant psychologically or in terms of time)	lower group	Emotional Support	2.65	2.63	2.06	2.63	3.00	3.03	3.00	2.56	3.00	3.50	.043*
		Specific Support	2.49	2.50	2.25	2.50	3.00	2.93	3.00	2.50	3.00	3.25	.003**
		Agreements and Negotiations	2.54	2.67	2.00	2.67	3.00	2.89	2.67	2.33	2.67	3.58	.052
		Sharing and Difficulties	3.24	3.25	2.81	3.25	3.75	3.14	2.75	2.56	2.75	3.94	.482
	the middle group	Emotional Support	3.82	4.00	3.63	4.00	4.00	3.74	3.75	3.50	3.75	4.00	.244
		Specific Support	3.48	3.50	3.25	3.50	4.00	3.63	3.75	3.25	3.75	4.00	.100
		Agreements and Negotiations	3.36	3.33	3.00	3.33	3.67	3.48	3.67	3.00	3.67	4.00	.310
		Sharing and Difficulties	3.31	3.25	3.00	3.25	3.75	3.13	3.00	2.75	3.00	3.50	.157
	large herd	Emotional Support	4.45	4.25	4.00	4.25	4.88	4.23	4.25	4.00	4.25	4.88	.214
		Specific Support	4.34	4.25	4.00	4.25	4.63	4.02	4.25	3.50	4.25	4.50	.099
		Agreements and Negotiations	4.40	4.33	4.00	4.33	4.67	4.17	4.33	3.67	4.33	4.67	.204*
		Sharing and Difficulties	3.61	3.75	3.00	3.75	4.63	2.92	2.75	1.38	2.75	4.25	.018

Wilcoxon signed-rank test

Shared and Difficulty are scores after reverse point process

Regarding the influence of husbands' perceptions on their wives, the low group showed a significant increase in the scores for the husbands' "emotional support" and wives' "parenting agreement and negotiation", whereas the high group showed a significant increase in the relationship between "emotional support", "concrete support", and "parenting agreement and negotiation" (Table 8).

Table 8. The changes in the relationship between husband and wife based on the Married Couple Parenting Perceptions subscale scores as a result of the program implementation

			Before program execution				Post-program execution			
			Wife				Wife			
			Emotional Support	Specific Support	Agreements and Negotiations	Sharing and difficulties (reverse)	Emotional Support	Specific Support	Agreements and Negotiations	Sharing and difficulties (reverse)
Lower group	That (something mentioned before which is distant psychologically or in terms of time)	Emotional Support	.15	-.22	.12	-.13	.21	-.10	.48*	-.38
		Specific Support	.35	.40	.13	-.01	-.04	.24	.26	-.32
		Agreements and Negotiations	.03	-.27	.23	-.34	.27	.07	.35	-.04
		Sharing and Difficulties	-.15	.09	-.07	.52**	0.34	-.06	-.01	.62**
Large herd	That (something mentioned before which is distant psychologically or in terms of time)	Emotional Support	.61**	.32	.48*	.00	.61**	.60**	.62**	-.09
		Specific Support	.20	.27	-.03	.06	.43*	.61**	.61**	-.05
		Agreements and Negotiations	.50*	.12	.18	-.34	.57**	.45*	.59**	-.09
		Sharing and Difficulties	.06	.27	.09	.79**	-.23	-.14	-.13	.96**

Spearman correlation \*\*p<.01 \*p<.05 (two-tailed)

Sharing and difficulty correlated by scores after reverse point process

**Effect of the short version of the married-couple parenting perception scale score as influenced by the husband’s beliefs about his participation in education**

The presence or absence of that idea was determined to be significantly related to the couple parenting recognition scale score in 7 of the 20 items that husbands consider as “husband’s participation in education” (Table 9), specifically “Mothers and fathers are expected to share the responsibility for child-rearing and housework”, “It is becoming more common for fathers to participate in child-rearing”, “It is important for fathers to be actively involved in child-rearing to fully develop the potential of their children”, and “Fathers should eat well in the morning”.

Involvement of fathers with their children through play strengthens the children’s sense of trust in their fathers and brings about mental stability. The items related to this include “Knowing what your children like can help you communicate with them and understand their feelings” and “Try to be more involved in child-rearing for the sake of your children, your wife, and yourself”.

The number of household chores performed by the husband was significantly higher in the high or medium group than in the low group (Table 10).

Table 9. Effects of subscale scores on husbands' beliefs about their participation in education

Effectiveness of Husband's Participation in Education Content	Score Group	Nil Having		χ <sup>2</sup>	Cross tabulation			
		N	N		χ <sup>2</sup>	p	phi	p
1. Mothers and fathers are expected to share the responsibility for childcare and household chores	low	18	6	.014 *	10.82	.00	.47	.00 **
	amount of money	7	18	.028 *				
2. Fathers' participation in childcare is becoming more common	low	17	7	.041 *	7.38	.01	.38	.01 *
	amount of money	8	17	.072				
If fathers actively participate in child-rearing, children will have more opportunities to learn from their fathers' influence.	low	16	8	.102	1.74	.18	.18	.18
	amount of money	12	13	.841				
4. The power of the family, especially the father, is a major factor in a child's development	low	17	7	.041 *	1.82	.18	.19	.18
	amount of money	13	12	.841				
5. Fathers are the ones who show children "how to be a member of society."	low	19	5	.004 **	1.38	.24	.17	.24
	amount of money	16	9	.162				
6. It is important for fathers to be actively involved in child rearing to fully develop their children's potential	low	20	4	.001 **	6.74	.01	.37	.01 *
	amount of money	12	13	.841				
7. Even if it is difficult to have dinner together every day, fathers come home early several times a week and have dinner while enjoying conversation with their child.	low	17	7	.041 *	0.63	.42	.14	.43
	amount of money	15	10	.317				
8. If fathers eat well in the morning, their children will get into the habit of eating a lot in the morning	low	23	1	.000 **	5.09	.02	.32	.02 *
	amount of money	18	7	.028 *				
9. When fathers are involved with their children through play, children have a stronger sense of trust in their fathers, leading to emotional stability	low	19	5	.004 **	6.37	.01	.63	.01 *
	amount of money	11	14	.549				
10. Knowing what children like can be an opportunity to communicate with them and to understand their feelings	low	19	5	.004 **	6.37	.01	.36	.01 *
	amount of money	11	14	.549				
11. Understanding children's favorite foods, favorite characters, favorite games, etc. and engaging with them will deepen the relationship of trust between you and your children	low	20	4	.001 **	0.03	.11	.25	.07
	amount of money	15	10	.317				
12. Mutual respect and trust between fathers and mothers lead to children's emotional stability	low	20	4	.001 **	2.34	.19	.22	.13
	amount of money	16	9	.162				
13. It is important for fathers to praise and show appreciation for mothers in front of their children	low	19	5	.004 **	0.78	.52	.13	.38
	amount of money	17	8	.072				
14. It is important for mothers to praise fathers in front of their children as well	low	20	4	.001 **	2.35	.20	.22	.13
	amount of money	16	9	.162				
15. It is important to build trust between husband and wife because the relationship between father and mother can influence the child's future views on love and marriage	low	19	5	.004 **	2.11	.15	.21	.15
	amount of money	15	10	.317				
16. Fathers who actively participate in childcare are more efficient, trying to get their work done faster in order to take care of their children	low	20	4	.001 **	3.26	.11	.26	.07
	amount of money	15	10	.317				
17. Try to be more involved in parenting for the sake of your children, your wife, and yourself	low	21	3	.000 **	7.26	.01	.49	.00 **
	amount of money	13	12	.841				
18. For children, a father is someone who shows them "how to be a member of society."	low	23	1	.000 **	2.85	.18	.24	.09
	amount of money	20	5	.003 **				
19. The father's voluntary participation in household chores and work is an opportunity to convey the joy of work to his children	low	18	6	.014 *	0.70	.40	.12	.40
	amount of money	16	9	.162				
20. The father's voluntary participation in household chores and work will trigger the child's interest in "working"	low	20	4	.001 **	2.34	.20	.22	.13
	amount of money	16	9	.162				

High group, N = 25; Low group, N = 24 (excluding middle group)  
 Nonparametric chi-squared test, cross-tabulation χ<sup>2</sup> test (df = 1) \*p < .05; \*\*p < .01

Table 10: Perception of marital parenting and number of husband's household chores performed

Husband's marital parenting Perception Scale Score Group	N	Mean	Median	25	50	75	p	Multiple comparisons
Lower group	24	8.38	2.00	1.00	2.00	15.50		
Middle group	45	15.35	14.00	5.00	14.00	23.50	.003**	Low<high .015 Low<medium .005
Large herd	25	15.96	16.00	8.00	16.00	22.00		

Kruskal-Wallis test\*p < .05

Multiple comparisons: Bonferroni\*p < .05

## Discussion

### Program effectiveness

#### Changes in the couple parenting perception scale

The present study developed a program to help couples cooperate with each other in child-rearing and examined the program's effectiveness. The program was implemented to make the couple aware of 15 items, and from the scores of the four subscales evaluated, it was clear that an increase in the husband's score resulted in a significant increase in the wife's score, and the correlation between the subscales confirmed the synergistic effect of the program on the other scales. The lower scores of the high group for the wife's "emotional support" and "concrete support" items and the husband's "emotional support" and "agreement and negotiation" items were not significantly higher or worse than the scores of the middle group. The lower results are thought to be due to the adjustments in perceptions made by participating in the program.

Husbands in the high group were significantly more likely to believe that "mothers and fathers are expected to share the responsibility for child-rearing and housework" and that "it is becoming more common for fathers to participate in child-rearing". The husbands' recognition of the effect of their participation in education increases the perception of couple parenting. Additionally, the higher the score, the more housework the husband did, and the higher the perception of couple parenting, the more the husband collaborated with the wife.

#### Effects of husband's participation in education

Regarding the effect of husbands' participation in education, significantly a greater number of husbands in the high group than in the low group held the same view, but only approximately half of the husbands overall agreed that "mothers and fathers are expected to share the responsibility for child-rearing and housework" and "it has become common for fathers to participate in child-rearing". Husbands with high awareness of couple parenting were more effective in their husbands' educational participation. Regarding the educational participation effect, specifically, it was agreement with being actively involved in child-rearing, which was related to a higher awareness of eating a good breakfast, playing and communicating with others. The key to promoting couple parenting would be to increase the level of awareness of the husbands' participation in their children's education. In a cross-sectional study on influencing factors of couple parenting, the status of father image formation from the pregnancy period may influence co-parenting during infancy [19] and "the child's. It is thought that fostering an awareness of fatherhood and the accompanying behaviors, including "feelings aroused by the presence of children" and "heightened awareness of fatherhood", may have a positive effect on couple parenting.

#### Execution of programs 1 to 4 and consideration of programs based on suggestions and feedback

There was a significant difference in the level of awareness of execution between the low and high groups, and we believe that the issue is how to make them aware of execution, as they forget to be aware of it due to busyness or lose track of the items to be aware of,

even though they have the will to execute the program. However, the program's effects were evident in the low and high groups, and it can be said that the effect of awareness of execution had little influence on the program's effects. Additionally, although we believe that efforts under similar conditions were not made, the awareness of the implementation of this program was observed in both the high and low groups. In the high group, husbands were found to be more aware of and responsive to the initiatives. This indicates a high level of interest in these issues, a willingness to address their own issues, and an awareness of the program because it is an approach different from the usual method.

The top suggestions were to give priority to items that should be considered, to do only those items that are important to be aware of, to do only those items that are difficult to be aware of, to be aware of them at the same time of marriage in order for the couple to cooperate, and to check them periodically, as one item a day is easy to be aware of. In implementing the program, it would be effective to present the suggestions in advance so that each couple can choose the method that is easiest for them to implement when considering and implementing the suggestions.

Furthermore, based on the feedback on the program, many positive comments were received, including awareness of the change in the couple's relationship in a positive direction and realization on what to do in concrete ways, a greater sense of consideration for the other person, realization of the difficulties in child-rearing and the wife's difficulties and the cuteness of the children, and a reaffirmation of the differences between the couple. Contrarily, there were several opinions, which were as follows: the significance of the program was not conveyed; they could not do it consciously; it was stressful to do something they were not usually aware of; they clashed over trivial matters and could not do what they wanted; and manual aspects, such as not getting through to their partner, did not motivate them. Although these cases were not necessarily related to the highness or lowness of scores on the scale, they were considered to require further adjustments through further programming or direct intervention by a third party. In the adjustment through a direct intervention, it may be important to support the couple by focusing on the timing of when they need support, considering how to approach childcare, and sensing the differences in their thoughts and feelings so that they can deepen their understanding of each other; this is considered an adjustment that places importance on the couple's sense of tempo [20]. Additionally, the fact that the feelings toward the wife during the pregnancy period have the greatest influence on postpartum co-parenting [19] suggests that interventions during this period may be effective for couples who do not find positive effects from intervention during the child-rearing period. In order to do so, screening should be conducted during the pregnancy period. For this purpose, it is necessary to consider interventions through screening and programs that continue through pregnancy and child-rearing.

### Research Limitations and Challenges

Given that the present study was conducted as an online survey and some sincere responses were not obtained, these responses were excluded from the analysis based on their content. Additionally, the implementation status of the intervention items was evaluated based solely on the online responses. In the future, we would like to devise ways in conducting the survey in order to obtain voluntary cooperation and more accurate responses. Additionally, based on this survey, we would like to examine the program issues and intervention methods, and attempt to further increase the number of participants in the program.

### Conclusion

The program was effective in the group with low couple parenting recognition scale scores. In the high group, the scores decreased after the program was implemented, but they were within the valid range. Since the husband's educational effect and couple parenting were significantly related, the formation of the husband's image of fatherhood was considered effective for couple parenting, and the program can be evaluated as effective based on the many positive feedback on the program. It was considered necessary to further examine how to respond to couples who evaluated the program backwardly in the future.

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### Conflict of Interest

There are no conflicts of interest related to this research.

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