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Development of Young carer psychological scale Japanese version
- Reliability and validity examination-

Shigeki Okuyama [1)]

1), Graduate Sch0ol of education, Tohoku University

ABSTRACT. In recent years, reports on young people and children who take care of their own parents and grandparents in their homes are getting picked up in the media. Based on the Ministry of Internal Affairs' Employment Structure Basic Survey (2014), it is reported that in Japan there are nearly 180,000 people who have such a role. It has been noted that such young people and children are at high risk of suffering various influences on academic work, employment and even mental health, in connection with engaging in care for their families, the necessity of support has been pointed out from the previous research including the UK. Even in Japan, there are some aspects that are gradually being clarified from the media reports and the interview survey for the parties as mentioned above, but the number of empirical studies is very limited. In this study, we proceeded empirical research on young people and children (hereinafter referred to as Young carer) who provide nursing care and care to such families of diseased and disabled adults, and developed a psychological scale that can be index to contribute to accumulation of useful knowledge for its support. Items were prepared through Japanese translation of the content of young carer of Inventory Revised (YCOPI-R) by Cox et al (2014) and back translation. Using the Internet survey, we analyzed the responses of 174 people (including 59 Young carers) from the obtained data. As a result of factor analysis, the same structure as Cox et al (2014) was observed. It was also shown that reliability and validity are sufficient .It was considered that it is necessary to empirically investigate mental health, relationship with family function and structure, adaptability fulfilled by maturity perceived by the parties, in the future research using the developed scale.

KEY WORDS: Young carers, Family caregiver Young caregiver nursing care,

Introduction

（1）Problems with family caregivers

In recent years, with the background of progressive aging in Japanese society, problems concerning nursing care of family members are being treated as social problems. Although the nursing-care insurance system has been introduced and it has been touted that not only its families but also local communities and society act as a whole support nursing care but the reality is that the burden is still being borne by families. According to the survey conducted by the Ministry of Health, Labor and Welfare in Fiscal Year 2016, 60% of the caregivers who provide the main care to the requiring caregivers consist of family members living together such as spouse and child (Ministry of Health, Labor and Welfare, 2017).This survey shows nearly 70% of the family caregivers are complaining about the suffering in daily life

CORRESPONDENCE TO: Shigeki Okuyama Tohoku University, gaduate school of education, 27-1 Kawauchi, Aoba-ku, Sendai 9808576 JAPAN
e-mail: okuyama.shigeki@gmail.com

and the existence of stress. From these current circumstances, attention is now being focused on the mental health of family caregivers who care for patients in recent years, and psychological aid is being practiced for those people. However, when discussing such topics, the assumption as "family caregivers" is often more than adults, and the research dealt with "family caregivers" of young people and children under age are little.

（2）Young people and children as family caregivers

According to the results of the Basic Survey on Employment Structure in Fiscal Year 2012 conducted by the Ministry of Internal Affairs and Communications, it is estimated that the number of people under the age of 30 who are responsible for care of their families is as high as about 180,000 in Japan (Ministry of Public Management, 2014). Considered this survey covers those the age of 15 or older, it is expected that actually a larger number of young people will be involved in family care.

According to Shibuya (2014), who investigated social workers in Tokyo, it is reported the experience concerning the cases that 35.3% of the respondents said that those under the age of 18 are playing the role of the primary caregiver within their families. In addition, in the survey targeting teachers of public junior high schools, 20% of respondents say that there are students in charge of nursing care and care for their families in the class (Kitayama / Ishikura, 2015). Additionally, according to Okuyama's survey (2016) with college students, 5% of all responses are answered that they have experience of nursing care for their families. Also in media coverage, it has become increasingly seen to discuss on family care and young people and children responsible for care of their families (Asahi Shimbun published on January 27, 2016, Nikkei published March 15, 2016) and the existence of youths and children who are "family caregivers" is gradually being recognized and the attention is also being paid to the conflicts and sufferings of the parties.

（3）Who is Young carer?

These young people and children who are responsible for family care are called young carer and it has been targeted for research and practical support mainly in the UK. The definition of young carer was recognized by the country in which the survey was conducted, and there are differences mainly on the age. For example, within the guidelines internationally indicated by UK's support groups, it is defined as "Young carer" should be taken to include children and young people under 18 who provide regular and ongoing care and emotional support to a family member who is physically or mentally ill, disabled or misuses substances"(ADASS et al., 2012), and strictly emphasizes that it is limited to those under the age of 18. On the other hand, the Australian Government Department of Social Welfare Bureau's statement on the website considers family caregivers under 25 years old as a young carer and has provided public services for them (Australia Government Department of Social Service, 2016) , and family caregivers up to 25 years old is publicly recognized as young carer.

In the UK, young caregivers up to 25 years old are distinguished as being referred to as Young adult carers, but it showed that they are in the same situation as young carer for suffering greatly with restrictions on daily life as listed later.

It is clear that “care” provided by young carers to families is not limited to "nursing care" acts such as side assistance or assistance for mobilization, but also emotional support such as encouragement and it is easily extended to housekeeping acts on behalf of families who cannot function fully due to illness or disability, and the area of involvement has been shown to be diverse. It is pointed out that because of such an increase in burden, health becomes impaired both physically and mentally by excessive amount of care.

A survey targeting young carers in the UK (Dearden & Becker, 2004) shows that various risks and negative influences are generated in the parties as a result of their high involvement in family care. First, there are many social restrictions, such as loss of opportunity when choosing career such as admission to university or employment. It also points out that interpersonal relationships such as bullying caused by no opportunities to spend time with friends of the same age due to care of their families, or being in a family environment different from those of same age groups occurs.Besides, there are emerging of problem behavior such as decrease in mental health, self-harm, suicide and drug abuse caused by pressure from inside and outside of family against them taking care of family and exposure to stress experienced in various aspects in family care.

While such social adaptation risks are being clarified, positive aspects by caring for families as young carers are also mentioned (Aldridge & Becker, 1993; Dearden & Becker, 2004). It can be divided into three aspects from its contents. One of them is the improvement of family relationship, such as getting close within families compared to previous family situation. Also, the positive aspects such as self-awareness of internal mature in the person by care of the family himself, or mastering the life skills such as acquiring living skills and knowledge to be obtained as a result of experiences as a young carer.

(4) Difference between adult caregiver and "Young carer"

Young carer and an adult care giver are the same in terms of burden and restrictions on social life as being responsible for family care, but due to their chronological differences it is expected that the psychological development aspects of the parties will be affected for young career. For example, many of young careers are in the stage of receiving education and it is clear that lowering academic ability, late arrivals and absences become more frequent by taking care of family members (Dearden & Becker, 2004). In addition, infringement of such educational opportunities leads not only to academic achievement but also to the lack of opportunities for interaction with friends of the same age as young carer, which will have a great influence on the acquisition of sociality at school age is expected. In addition, since young

carers will bear more responsibility than their age-appropriate, they are also said to fulfill "spurious maturity" by being pressed for an emotional maturation that is unlikely at the stage of their growth (Mitomi, 1997), the possibility of influencing personality aspects is expected as well. In addition, it is considered that such effects will affect not only at that point but also will spread after children / adolescents who are young carers become adults. Medium and long term effects on the emotional development of these parties seems to exert different difficulties on young carer than the influence on adult caregivers. Due to such specificity, examination with an index different from that of adult caregivers seems to be necessary for young carers.

(5) Purpose of this research

In this way, although there are overlapping parts in terms of action, it is expected that there will be differences in aspects affected by adult caregivers and young carer who is in the middle of development. In recent years, research focusing on them has been done mainly in the field of social welfare in Japan, and it has been made clear that the they have experienced strong difficulties (Morita, 2010). The provision of psychological support for such difficulties seems to be an issue, but in Japan there are few studies that took up young carers and accumulation of research aimed at young carers is considered necessary in order to contribute to the future support.

With these backgrounds, this research aims to create a Japanese version of psychological scale, which is an index of young carer research in psychology and welfare study. When the scale is developed, it may contribute to the understanding of young carer which is not yet clear in Japan and the construction of its support.

For the definition of young carer used in this research, “Young carer” in the broad sense including youth adult carer in the UK will be dealt first. This is because knowledge about young carer is not accumulated in Japan, and it was concerned that the number of survey subjects will be short in case of limiting to minors. As for the upper limit of the age at this time, following the official definition of young carer used in Australia, those who are less than 25 years old at the time of the survey shall be subject to "Young carer". In addition, there are cases in which siblings are also included in families who receive such care in previous research, but due to low social cognitive on young carer in Japan there is a risk the survey will include those who take care of the younger siblings as part of the help in the home, so in this research it limits to only who provide the care to adults such as parents and grandparents. Also, we set the standard on period of care as more than 1 year in this research, and exclude those who do not satisfy them from survey subjects.

Based on these facts, in this research, we define the definition of young carer as "those who have had experience of providing nursing care / support to an adult family member (grandparents, relatives or parents who lives in the same house) who is in need of support and care for physical and psychological diseases /

disabilities, dementia, etc for more than one year before 25-year-old.

Although a number of psychological measures on burden of care targeting carers have already been developed in Japan (Arai, 2002, etc.), it is considered necessary to develop a different index from the psychological scale for adult caregivers since it is expected to affect differently to young carer mainly on the emotional development due to differences in age from adults caregivers and the "nursing care" acts and "care" acts performed by young carer are different. Therefore, in this research we will create a scale specialized for young carers.

Methods

(1) Survey method

We conducted an internet survey in January 2017. All the survey cooperators were those who registered the monitor to the survey company. We stated in the text prior to survey that research cooperation is free will, the answers obtained are not used for other than research purposes, if mental suffering occurs by responding they can stop anytime, it takes about 20 minutes to complete, and asked to participate only when agreement is made.

(2) Subject

Respondents were recruited from young carers under the age of 30 at the time of the survey as well as those who did not have such experience for the purpose of considering the validity of their development scale.

(3) The structure of questionnaire

①Face sheet:

In order to obtain attributes of survey cooperators, we got responses on age, sex, marital status, presence of children, occupation, and final academic background from all the respondents. In addition, for those who qualify as a young carer experienced person, the family composition, care recipients, disability grade of care recipients and degree of care required, time to care per day, frequency of care per week, the number of years involved, the content of care, relationship with others who also provide the care within their families, the number of care providers in their families, as to whether hospitalization or hospital visit of care recipient and use of facility, the reasons for finishing involvement in family care (apply only to experienced parties) were questioned.

② Young carers psychological measure of Japanese version:

One of the psychological measures for young carer is Young carer of Parent Inventory Revised (hereinafter referred to as YCOPI-R) developed by Cox & Pakenham (2014). YCOPI-R is a revision of Young carer of Parent Inventory (YCOPI) developed by Pakenham, Bursnall, Chiu, Cannon & Okochi (2006), and in addition to questions of actual experience of children and adolescents taking care of parents, the questionnaires also includes about emotions that are expected to be experienced in a spilling manner from such a situation, such as a strong sense of responsibility to families and isolated feelings from the surroundings. In Cox & Pakenham (2014), they recruited from schools, regions, support groups, etc. in Australia and developed 2336 subjects including 576 young

carers who were responsible for parent care. In part A it is designed to measure care experience in daily life in families in youth general, and general young people and children other than young carer can also answer, so comparative study is possible between them. As a specific factor, there are 6 factors of "Activity restrictions: Global", "Activity restrictions: Study / Work", "Isolation", "Perceived maturity", "Caregiving responsibilities", and "Worry about parents" in part A. On the other hand, Part B consists of items that measure peculiar experiences only for young people who care for families with health conditions such as disease and disability, and only young carer parties can answer. There are 5 factors of "Caregiving guilt", "Caregiving isolation", "Caregiving confidence", "Caregiving discomfort", and "Caregiving information / support" in part B. In addition to the original English version, a Dutch version has also been created (Sieh, Visser-Meily, Oort, & Meijer, 2012). Many applications of the previous studies see the relationship between family care experience reflected in part A and other variables, as demographic variables such as the type of disease, the number of family members, age, sex, race Influence on family care experience (Pakenham & Cox, 2015), relation between family care experience and internalization issues and externalization problems (Sieh, Visser-Meily, Oort, & Meijer, 2012) and stress effects (Romijin, 2015) have been studied.

In this way, in addition to the two features YCOPI - R has a variety of item contents and comparability with the general youth, there is a point that it was used also in the previous study which studied the psychological aspect of young carer, YCOPI-R was considered to be a useful indicator in promoting young carer research in Japan as well. Therefore, with the permission from the original author, we translated YCOPI - R contents to Japanese and created a scale in this research.

As for the translation of each item, the researcher translated the English item, then asked back translation for a company specializing in academic translation, and under the confirmation of other graduate students and academic advisor the decision was made. Also in both of the original YCOPI and YCOPI-R, each item limited the recipients of care to parents, but since we do not limit care recipients to parents only in this study we modified the expression on the item restricted to "Parent" to "Family" or "Other family members". Regarding modification of these expressions, we also obtained permission from the original authors. Following the conventional YCOPI-R, we made two parts with part A (26 items) and part B (18 items), and both were prepared by the five methods ("not true at all "to "very true").

③Zarit nursing care burden scale Japanese version (J - ZBI):

It was used to examine the validity of the part B part of the young carer psychological scale Japanese version. The original was The Zarit Burden Interview (ZBI) developed by Zarit (1980), Japanese translation version was developed by Arai et al (1997). Zarit defines

the nursing care burden as "degree of damage the caregiver suffered in terms of emotional, physical health, social life and economic condition as a result of caring for a relative," and J - ZBI also measured the nursing care burden by this definition. It has been pointed out that the scale consists of two factors: Personal Strain (the burden caused by the nursing care act itself) and Role Strain (the burden caused by losing the life by playing the role of care for the family) (Whitlatch et al, 1991). Regarding the expression "patient" in each item, the respondents were requested to consider the person who was responsible for care in the home for answer. We got permission on the use of the scale and notes on reply from the right holder of the Japanese version scale prior to conduct the investigation.

(4) Reliability and validity examination

Regarding the Part A, when developing YCOPI by Pakenham et al (2006), the validity was considered by a significant difference in score between young carer and others. In this research, following the original thesis, we also consider the validity by calculating the significant difference of the subscale scores for each factor between young carer experienced persons and others. As items in the original scale are prepared from the contents obtained by previous studies targeting young carer and interviews with the parties, in this result as well as Pakenham et al (2006), it is expected that the young carer group will score significantly higher on all the subscale scores at part A.

Regarding the part B part that measures psychological burden feeling due to engage in family cares, it was considered that J-ZBI is appropriate as an external standard from the content of the item. From the significance of the correlation coefficient between the subscale score of the factor derived from the analysis result and J - ZBI, the validity is examined. In addition to the item contents related to negative feelings from sense of burden on the original scale, items of semantic content relating to positive emotions that shows confidence for family care are also provided. Among them, it is expected to see the significant correlation with J – ZBI on the factors with a negative item content, and uncorrelated relationship with the burden feeling reflected on J – ZBI on the factors with positive item content.

For the reliability test, we decided to examine it by Cronbach's α coefficient in both part A and part B.

(5) Ethical consideration

This research was conducted after obtaining the research permission from the Ethics Review Committee of the Graduate School of Education, Tohoku University.

Results

(1) Young caring situation

We got the cooperation from 206 people with young carer experience. Among them, those who do not conform to the definition of young carer in this research, those who was suspected validity of the response contents from the item reaction (answers with the same number on multiple scales, a big contradiction between the content of the entry etc) were excluded from the analysis. Also, because it was predicted that

Table 1 : The opponent young carer provide the care (including multiple answers)

	Number of respondents
Father	8
Mother	12
Grandfather	9
Grandmother	29
Uncle	2
Aunt	9
Other relative	0

married persons and those with child-rearing experience could become confounders in terms of care for their families, those who have married and their children also were excluded from the analysis data. Furthermore, as it was considered difficult to find conditional differences with those who do not have family care experience, those who responded to both "one day a week" and "less than one hour" on the question regarding the the time per day and frequency per week involved in care were excluded. In addition, we recruited research collaborators including past experienced persons, but considering distortions of responses by recall method, we targeted only those who are performing family care at the time of the survey. A total of 59 people who remained after setting these exclusion conditions were considered as young carer experienced persons (hereinafter referred to as young carer group).

We also gained survey cooperation from 206 people who did not have experience in involvement in family care, the same number of people who experienced young carer.

Regarding this, with the same conditions for experienced young carer mentioned above, those who suspected the appropriateness of the response content from the response to the item, married persons and experienced childcare experience were excluded from the data. As a result, data of 115 people in total who did not have experience of involvement in family care (hereinafter referred to as target groups) were used, and 174 subjects were analyzed as a whole.

The average age of the surveyed subjects was 24.17 ± 3.91 years, and there was no significant difference between the groups (Young carer group $M = 24.64 \pm 3.75$ years old: comparison group $M = 23.92 \pm 3.98$ years old). There was a tendency for females to be larger in both young carer group and comparison group (young carer group 19 males and 40 females: comparison group 31 males and 84 females). There was no significant difference in the final academic background of the subjects between the groups, and those who had the final academic background over college or university graduation occupied the majority in

Table 2 : The degree of care required for family and classification of certificate (including multiple answers)	
	Number of respondents
handicapped certificate (1st degree)	11
handicapped certificate (2nd degree)	7
handicapped certificate (3rd degree or below)	2
certificate classification unknown	10
certificate required support (1)	9
certificate required support (2)	8
certificate of long-term care needs (1)	0
certificate of long-term care needs (2)	7
certificate of long-term care needs (3)	6
certificate of long-term care needs (4)	4
certificate of long-term care needs (5)	2
certificate of long-term care needs unknown	12
not possess the certification for handicapped nor long0term care needs	8

both groups.

The grandmother was the most opponent who young carer had offered care, followed by grandfather, mother, aunt, father, uncle (Table 1). Though there are multiple answers, the reasons for care and nursing care required were 34 cases of physical disorder, 30 mental illnesses including dementia and intellectual impairment and 29 disabilities with physical disability. Regarding the degree of care required for the family receiving care and the type of physical disability certificate, 11 were the most frequent people who care for families with certified disability grade 1. There are 12 people who care for families who require 3 or more degree of nursing care and in a state of "almost full care needs", and more than certain number of people experienced the care for families in severe condition (Table 2). Regarding the time for care per day there were 39 people under 3 hours, and regarding the frequency of days involved in care per week 23 people involved in family care almost every day (Table 3). With regard to the content of care that the young carers handle, the most of them were housekeeping or help on it, and the domestic assistance such as assisting mobility and providing medicines was also carried out in large part, (Table 4). There were 35 people who shared care with two or more families besides themselves, but the remaining 24 persons handle the care alone or shared care with another person within the family.

(2)Preparation of young carer psychological scale Japanese version part A and examination of reliability and validity

Table 3: Time and number of days spend on family care

Time per day	Number of respondents	Number of days per week	Number of respondents
less than 1 hour/day	15	once a week	5
less than 3 hours/day	24	less than 3 days/week	19
less than 5 hours/day	9	less than 5 days/week	11
less than 7 hours/day	6	almost everyday	23
less than 10 hours/day	1		
more than 10 hours/day	1		

Initially, the distribution of score was confirmed for each item. Since the result shows no noticeable bias such as floor effect or ceiling normal distribution of data in subsequent analyzes.

Factor analysis by maximum likelihood method was performed on 26 items of Part A part. As a result, it was shown from the eigenvalue and the reference of the Scree plot that the same five factor structure as the original YCOPI is valid. After that, in the process of repeating the analysis, the three items whose load amount fell below .40 ("I take on more responsibility around the house than other people my age.", " I know more about looking after a household than other people my age.","I feel as though I am missing out on things that other people my age are doing ") were excluded and the final factor pattern was made (Table 5).

The first factor is composed of 12 items meaning restrictions on life such as studies due to involvement in families and restraints, as " I sometimes miss school/work because I have to help my family members." “Because of helping my family members I sometimes feel too tired or too busy to do my study/work so much to support my family that I cannot study," and it was named "restriction / restraint feeling". The second factor consists of 3 items, and it shows a group with strong worries and concerns for families such as “I worry about my family members” and “I always wonder if my family members are safe" and it was named "fear of family conditions". The third factor is from 4 items such as " Others expect me to help my family members " and " Other family members expect me to help care for them " and it was named “Expectation within family” . The fourth factor consists of 2 items such as “I am more grown-up and mature than other people my age” “I feel more like an adult than other people my age" and it was named "awareness of maturity". The fifth factor is composed of 3 items such as “I sometimes feel alone " and " I wish that I had other people to talk to about my feelings and worries” and it was named "Loneliness".

Table 4: The care acts responsible as young carer (including multiple answers)	
	Number of respondents
housekeeping or help on housework	47
help in daily life such as mobility assistance or medicine management	36
help on social aspect such as money management or public procedure	13
emotional support such as encouragement or reception	24
physical support such as at bathroom or clothes removal	17
provide childcare to other siblings	4
assist outside of house such as visit to hospital or facility	25
others	0

The correlation between factors ranged from .113 to .701, and in particular the second factor "fear of family conditions" was shown to be low correlated with other factors in general. After establishing the factor structure, we calculated the subscale scores for each factor in order to examine the reliability.

After that, as the result of α coefficient of Cronbach showed that the fifth factor "loneliness" was somewhat lower at .69 but the other factors showed high reliability from. 81 to .89, the overall scale was considered to have reasonable reliability.

As in the method of validation of Pakenham et al (2006), we also conducted T test in this study to compare the score between young carer group and the comparison group for each subscale as a study of the validity of the scale. As a result, a significant difference was shown between the young carer group and the comparison group on the score for each factor ("restriction / restraint feeling" $t = 8.06$ $df = 172$ $p < .001$; "fear of family conditions" $t = 2.18$ $df = 172$ $p < .05$; "expectations to support family" $t = 5.05$ $df = 172$ $p < .001$; "awareness of maturity" $t = 3.43$ $df = 172$ $p < .01$; "Loneliness" $t = 2.43$ $df = 172$ $p < .05$). From this, it shows that the young carer Psychological Scale Japanese version of part A created in this study has a high possibility of high scores in young carer's respond, from the discrimination possibility it was conceivable that the scale had certain validity. Details about the score and standard deviation are shown in Table 6.

(3) Preparation of young carer psychological scale Japanese version part B and examination of reliability and validity

Part B got responses only from the young carer group. Since Part B does not show distribution bias which can be regarded as the floor effect and the ceiling effect as well, an analysis method based on the assumption of normal distribution was used in the subsequent analysis.

As a result of factor analysis by the maximum

Table 5: young carer psychological scale Japanese version Part A factor analysis result maximum likehood method Promax rotation N=174						
		I	II	III	IV	V
item	Item description					
5	I sometimes miss school/work because I have to help my family members	**.98**	.09	.27	.00	.07
14	Because of helping my family members I sometimes feel too tired or too busy to do my study/work	**.93**	.09	.02	.14	.03
23	I sometimes feel tired at school/work because I have been helping my family menbers	**.82**	.03	.07	.11	.04
3	Helping other family members stops me from doing a lot of things that I want to do	**.74**	.01	.10	.06	.01
6	If I do not take on extra responsibilities the house will fall apart	**.71**	.06	.07	.05	.10
24	My family members rely on me to help them with house-hold chores	**.56**	.01	.21	.00	.02
25	My family members rely on me to do the shopping and budgeting	**.55**	.02	.09	.12	.02
16	I have to look after my other family members	**.53**	.10	.27	.10	.06
26	My family members rely on me to make sure our family is organized	**.52**	.01	.16	.14	.04
21	I have a lot of time to do the things that I want to (R)	**.45**	.17	.03	.08	.00
10	Helping other family members stops me from doing paid work	**.43**	.03	.12	.05	.13
7	I miss out on a lot of activities because of my home	**.43**	.05	.34	.01	.03
1	I worry about my family members	.07	**.87**	.12	.01	.10
8	I always wonder if my family members are safe	.08	**.82**	.08	.03	.04
19	I worry about what will happen to my family members	.09	**.66**	.17	.04	.04
11	Others expect me to help my family members	.01	.05	**.92**	.01	.03
15	Other family members expect me to help care for them	.09	.09	**.64**	.04	.07
12	My family members rely on me for emotional support such as making them feel better	.17	.18	**.55**	.04	.03

		I	II	III	IV	V
20	I am more grown-up and mature than other people my age	.01	.06	.01	**1.02**	.05
17	I feel more like an adult than other people my age	.01	.07	.03	**.79**	.06
13	I sometimes feel alone	.01	.07	.09	.03	**1.03**
4	I wish that I had other people to talk to about my feelings and worries	.06	.19	.16	.07	**.42**
22	Oher people do not understand me and my situation	.13	.01	.15	.02	**.41**
	Factor correlation	I	II	III	IV	V
	I	-	.26	.70	.42	.44
	II		-	.32	.30	.11
	III			-	.39	.41
	IV				-	.25
	V					-

likelihood method for 18 items of Part B.

It seems that 4 factors are reasonable from the eigenvalue value. However, when factor analysis was repeated based on the assumption of a 4 factor solution, multiple factors which were hard to interpret were calculated, and the result was same with factor analysis with 5 factors as in the revised edition (Cox et al, 2014). Next, based on the original Pakenham et al (2006), we conducted the analysis on the assumption of a 3 factor solution. After that, items whose factor load amount is less than .40 such as ("I cannot tell my family's anxiety and concern about my family in order to avoid the disturbance of the other party", "I wish I could invite a friend to my house") were excluded, and finally the 16 items with 3 factor structures was confirmed (Table 7).

Factor 1 is composed with a group of items to be considered to reflect a negative emotion related to family care such as “I find it hard explaining to my friends that my family members have an illness /disability ” and " I feel guilty when I don't help out at home " and it was named "negative emotion accompanying family care" (M = 3.02 SD =. 89). The second factor consists of a group of items showing self-confidence that they support their families and the strength of self-recognition such as " I am good at helping my family members and I always know what to do and how to help ", " I know exactly what to do to help my family members" and it was named "confidence to support the family"(M = 3.14 SD = .85). The third factor consists of 4 items that call for assistance to the present situation such as “I wish there was someone who was able to look out for me “I wish I could talk to other people my age who also have a family members with an illness/disability” and it was named “help

Table 6: The test result on Part A subscale score ***t*** between young carer group and general sample group N=174

	Young carer group		Comparison group		
	M	*SD*	*M*	*SD*	***t*** value
restriction/restraint feeling	3.10	.77	2.21	.63	8.06 ***
fear of family conditions	3.64	.97	3.30	.99	2.18 *
expectation to support family	3.30	.94	2.54	.93	5.06 ***
awareness of maturity	3.12	1.06	2.54	2.06	3.43 **
loneliness	3.38	.98	3.02	.90	2.43 *
*p<.05, **p<.01, ***p<.001					

seeking". (M = 3.26 SD = .86).

In the correlation between each factor, the value is low between the second factor "confidence to support the family" and other "negative emotions accompanying family care", "help seeking", and it shows that "confidence to support the family" is content-independent.

After establishing the factor structure, Cronbach's α coefficient was calculated for each factor. As a result, it was considered that each factor had sufficient reliability because it lies between .74 and .86.

With respect to the factors of "negative emotion accompanying family care" and "help seeking" out of factors of part B, it was considered to show correlation of both the burden feeling and significant positive from "Personal Strain" and "Role Strain" measured by J – ZBI from items that reflect negative emotions of the parties. On the other hand, "Confidence to support the family" was considered to be more positive in terms of the item content and the low correlation from previous two factors. Therefore, it was considered that the validity of "confidence to support the family" is guaranteed by not showing a significant correlation between "Personal Strain" and "Role Strain" shown in J-ZBI. As a result of the correlation analysis, a significant positive correlation was found between "Role Strain" and "Personal Strain" in both "negative emotion accompanying family care" and "help seeking". In addition, there was no significant correlation between "confidence to support the family" and "Role Strain" and "Personal Strain" (Table 8). From these results, part B was also recognized to be adequate as a scale from the relationship with external standards.

Discussion

(1) Reliability and validity of the scale developed in this research

The purpose of this research was to develop a psychological scale that could be a useful indicator for researching young carer in Japan.

The results of the study showed that both Part A and Part B of the development scale have

Table 7: Factor analysis result of young carer Psychological scale Japanese version
Part B maximum likehood method Promax rotation N=59

item	Item description	I	II	III
14	I find it hard explaining to my friends that my family members have an illness /disability	**.83**	.09	.08
15	I feel guilty when I don't help out at home	**.74**	.15	.03
2	I feel embarrassed about my family member’s illness/disability	**.66**	.21	.15
7	When I am out with friends I feel that I should be at home instead	**.66**	.07	.03
4	I feel guilty when I go out and have fun	**.60**	.02	.19
6	I wish that I did not have to help my family members as much as I do	**.50**	.38	.46
16	I find it difficult to ask other people for help in my caring role when I need it	**.41**	.00	.19
3	I am good at helping my family members and I always know what to do and how to help	.06	**.86**	.01
9	I know exactly what to do to help my family members	.14	**.80**	.16
10	I wish I had more information about my family member's llness/disability	.14	**.55**	.09
17	I am confident that I can care for other family members	.27	**.50**	.12
12	I am included in making decisions about other family member’s illness/disability	.11	**.49**	.03
13	I wish there was someone who was able to look out for me	.20	.22	**.98**
5	I wish I could talk to other people my age who also have a family members with an illness/disability	.16	.11	**.55**
1	I wish that someone else could care for my family members	.27	.22	**.46**
18	I wish the doctors would talk to me and explain things about my family member’s illness/disability	.07	.25	**.43**
	Factor correlation	I	II	III
	I	-	.22	.53
	II		-	.23
	III			-

sufficient reliability and adequacy as a scale. "Fear of family conditions", "Awareness of maturity" and "Loneliness" shown in Part A as factors can be considered the same with "Worry About Parents", "Perceived Maturity" "in Cox & Pakenham (2014)", from the similarity of its contents. In addition, between "expectations to support the family" and "Caregiving Responsibilities", "restriction / feeling of restraint" and "Activity Restrictions: Global"

Table 8: Correlation analysis result between young carer psychological scale Japanese version Part B and J-ZBI				
	Personal Strain		Role Strain	
negative emotion accompanying family care	.55	***	.69	***
confidence to support the family	.14		.10	
help seeking	.64	***	.61	***
*p<.05, **p<.01, ***p<.001				

can also be considered to have the same content, we can consider that the Japanese version scale reflects the same contents as the original scale throughout.

In the correlation between the factors of part A, only the "fear of the family situation" was weakly correlated with other factors, and the other factors were strongly correlated among each other. This can be because the items included in "Fear of family conditions" included items that are likely to give high values also in the comparison group not responsible for family care (for example, "I am worrying about my family"), and as a result of a difference between other factors the whole correlation between the factors got weakened. However, because they also showed a significant difference between the groups, in terms of worrying about families, it is expected to be different in degree from "family oriented" held by young people and children living in families. In Okuyama (2016), young people with young carer experience have been shown to have a tendency to be significantly higher with characteristic uneasiness, compared with general college students, and it is pointed out that young carer's worry about family situation

In part B, the three factor structure with "negative emotions accompanying family care", "confidence to support the family" and "help seeking" was recognized. With regard to "Confidence to support the family" and "help seeking", it can be said that it corresponds to "Caregiving Confidence" and "Caregiving Information / Support" in Cox & Pakenham (2014). In addition, the first factor "negative emotions accompanying family care" is considered to be a comprehensive of negative emotional experiences felt by caring for families, and a summary of "Caregiving Guilt" ," Caregiving Isolation "and" Caregiving Discomfort " from the grouping of the item contents, and like Part A, Part B also seems to measure similar content with the original scale.

(2) The relationship between part A and part B

Among the scales created in this study, part A and part B seem to be measuring different regions respectively. According to Cox & Pakenham (2014) which is based, part A is said to measure care experience in the family in young people in general, and concerning part B, care is taken on families who are in health condition such as disease and disability, it is

said to measure specific experience only to young people who take care of unhealthy condition family members.

Among them, the experience of care in the family reflected in part A is expected to increase the influence on school work and social life such as becoming unable to have friendship with friends as increasing the degree, and it is considered that it focuses on the influence on social life by caring for the family. On the other hand, since part B is composed with items that questions the emotions the parties often feel such as "When I go out with my friends, I feel I should rather stay home" or "I wish that I do not need to care for my family like now", it is considered that it focuses on emotional aspects that are actually experienced with caring for families.

(3) Issues and limitations on this study

The issue and the limitations on this study are the unevenness of the population by Internet survey and the small number of samples. In the future, we should also recruit through cooperation of parties' groups of Carers and social welfare organizations. Particularly in this study, since the average age was around 24 years old it was desirable to secure young survey cooperators including minors, and reanalysis with the addition of new data may also be necessary.

(4) Future development using this scale

Among future developments, it is expected to be used for empirical research for young carer. For example, considering the relationship between aspects and mental health of young carers reflected on this scale may be a material to consider what factors are strongly associated with the distress caused in young carer.

It is also considered necessary to examine the function or structure of the family to which young carer belongs. It has been revealed from multiple previous studies of adult caregivers that relationships within their families affect the sense of care burden. For example, in a study targeting caregivers for adults, the low conflict between caregivers and care recipients (Townsend & Franks, 1995), the intimacy of the relation (Williamson & Schulz, 1990) , condition of family relations (Yoshida,· Minami, ·& Kuroda, 1997) are related to nursing care burden. Therefore, the necessity to support in the relationship between the care recipient and the caregiver in the family when supporting family caregivers was pointed out (Kurosawa, 2011). Even with young carers, considering what kind of family factors are related to young carer's social adaptation risk may lead to an effective supportive intervention suggestion.

In addition, it is also necessary to consider the adaptability of emotional maturity in young carer. Regarding emotional maturity, although the parties often report as positive aspects accompanying the experience of family care, researchers have expressed negative sense such as "shame maturity" (Mitomi, 1997). Regarding maturity, although it is considered that it acts positively for psychological adaptation, it is also considered that maladaptive aspects such as "pseudo-maturity". In Yamada, Hiraishi, Watanabe (2015), it highlights over adaptation, high emotional dependence, “commu-phobic" tendency, low trust of others as a feature of

pseudo-maturity. The condition that parents not giving emotional support to children and children giving emotional support to parents, parents imposing excessive expectation to children as a caregiver are considered to promote pseudo maturity for children. Among these promotion conditions, providing the emotional support from children to parents and excessive expectation as a caregiver from parents to children are expected to be the same with young carer, and it is also possible that the maturity reported in existing surveys may be pseudo maturity.

In the previous study of the social welfare area, it is often pointed out the necessity for psychological support to young carer. However, from a methodological limit, it is not clearly stated from the viewpoint of "what kind of support" is needed. Under such circumstances, empirically examining the emotional experience of young carer is expected to lead to stepping into the point of "what support" which was difficult to examine so far, and to contribute to the realization of practical and highly effective support.

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Appendix 1

Young carer psychological scale Japanese version Part A

Part A

No		
5	Ⅰ	私は家族を助ける必要があり、学校や仕事を休む時がある。
14	Ⅰ	家族を支えることで、勉強や仕事が手に付かないほど、疲れ果て、多忙であると感じることがある。
23	Ⅰ	私は家族の援助の為、学校や職場で疲労を感じる時がある。
3	Ⅰ	家族の手助けをすることで、自分がやりたい多くのことが妨げられている。
6	Ⅰ	私がより多くの責任を引き受けなければ、私の家はバラバラになってしまうだろう。
24	Ⅰ	私が家族は、私が家事全般を手伝うことに頼っている。
25	Ⅰ	私の家族は、買い物や金銭管理の面で私に頼っている。
16	Ⅰ	私は家族の世話をしなければならない。
26	Ⅰ	私の家族は、家族全体が上手くまわっているかを確認するチェック役を私に頼っている。
21	Ⅰ	自分がしたいことのために使える時間はたくさんある。
10	Ⅰ	家族を助けていることは、私が有給の仕事に就くことの妨げになっている。
7	Ⅰ	自分の家の事情のために、私は多くの活動をやり損ねている。
1	Ⅱ	私は家族のことを心配している。
8	Ⅱ	私は常に家族の安否を気にかけている。
19	Ⅱ	私は家族の身に何が起きるかを案じている。
11	Ⅲ	他の人は、私が家族を助けることの期待を私に向けている。
15	Ⅲ	私の家族は、彼らのケアを手伝うことを、私に頼っている。
12	Ⅲ	私の家族は、彼ら自身が気分良く過ごせるような情緒的なサポートを私に頼っている。
20	Ⅳ	私は、他の同じ年齢の人達と比較して、より大人びており、また成熟している。
17	Ⅳ	自分は、他の同年の人達よりも、より大人っぽいと感じる。
13	Ⅴ	ひとりぼっちであると感じることがある。
4	Ⅴ	自分の気持ちや心配事について話せる人がいたらと思う。
22	Ⅴ	他人は、私のことや私が置かれている状況を理解していない。
2		私は同年齢の人たちに比べて、家族周辺のことに対してより多くの責任を担っている。
9		自分は同い年の人達に比べ、家族の世話に関して、より多くのことを知っている。
18		私は、同い年の人達がするような事柄を経験する機会を逃していると感じている。

Appendix 2

Young carer psychological scale Japanese version Part B

Part B

No		
14	Ⅰ	家族成員に疾病や障がいがあることは、友人には説明するのは難しいと思っている
15	Ⅰ	家にいて手助けをしていない時、後ろめたさを感じる。
2	Ⅰ	私は家族成員の疾病や障がいを恥ずかしいと感じている。
7	Ⅰ	友人達と外出した際、自分はむしろ自宅にいるべきなのにと感じる。
4	Ⅰ	外出し楽しんでいると、うしろめたい気持になる。
6	Ⅰ	家族成員への援助を、今よりもしなくて良くなれば良いのにと思う。
16	Ⅰ	ケアに関しての助けが必要な時、他人にケアの手伝いを願い出るのは難しいと思っている。
3	Ⅱ	私は家族を助けることは得意であるし、助ける為に何をどのようにすべきかを熟知している。
9	Ⅱ	私は家族を助ける為に、何をするべきかはっきりと分かっている。
10	Ⅱ	自分の家族の疾病や障がいに関して、より多くの情報を知りたい。
17	Ⅱ	自分の家族をケアすることできるという自信が、私にはある。
12	Ⅱ	私は、家族の疾病や障がいに関して意思決定するメンバーの一人である。
13	Ⅲ	私のことを気にかけてくれる人がいてくれたら良かったのにと思う。
5	Ⅲ	自分と同年代で、同じように疾病や障がいを抱える家族を持つ人達と話すことができればいいのにと思う。
1	Ⅲ	誰か他の人が、家族成員をケアしてくれればいいのにと思う。
18	Ⅲ	家族の疾病や障がいについて、医者が自分に話したり、説明してくれたらいいのにと思う。
8		その相手が動揺することを望まないので、私は家族に関する不安や心配を家庭では打ち明けない。
11		友人を家に招くことが出来たらいいのにと思う。

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Comprehensive Stress Response Inventory for Children: Construction, Reliability, and Validity

Taku Hiraizumi [1)] Koubun Wakashima [2)] Keigo Asai[3)] Gen Takagi[2)] Daisuke Kobayashi[2)]
Ituki Andou[4)] Yui Akama[4)] Yu Shimizu[5)] Risa Kurita[6)]

[1)] *Tohoku Fukushi University*
[2)] *Tohoku University, Graduate School of Education*
[3)] *Hokkaido University of Education*
[4)] *Sendai City Board of Education*
[5)] *LITALICO lnc*.
[6)] *Sendai City Elementary School Teacher*

ABSTRACT. The objective of this study was to develop a new measure of stress response in children, the Comprehensive Stress Response Inventory for Children (CSI-C). The items and response options of the original CSI, which was designed for use with adults, were modified using expressions more accessible to children. This measure was then used to conduct a self-report survey among 500 respondents, who were first-grade elementary to third-grade high school students, located in the Tohoku or Kanto regions of Japan at the time of the Great East Japan Earthquake. A confirmatory factor analysis of the CSI-C demonstrated the validity of its four-factor structure, and Cronbach's alpha test indicated the scale to be reliable. Concurrent validity was confirmed with both the DSRS-C and PTSSC-15. Finally, cutoff values were determined using an ROC analysis, at 21 points for general stress response and 12 points for disaster stress response. The CSI-C uses a four-factor system, in accordance with prior theory, and our findings suggest that it provides sufficient reliability and validity as a measure of stress response in children.

KEY WORDS: comprehensive stress response, children, reliability, and validity

Introduction

Accurate evaluation of both the peculiar stress response manifested in children following a disaster, as well as everyday stress responses, is an essential first step in designing an appropriate support plan for these patients. Japanese-language options for evaluating posttraumatic stress responses in children through self-report include the internationally-employed UCLA PTSD Reaction Index for DSM-IV (Steinberg, Brymer, Decker, & Pynoos, 2004; rights to the Japanese language version held by Hyogo Institute for Traumatic Stress), as well as the Trauma

CORRESPONDENCE TO: Hiraizumi Tohoku Fukushi University, Faculty of General Welfare, Department of Welfare Psychology, 1-8-1, Kunimi, Aoba-ku, Sendai-city, 981-8522, JAPAN.
e-mail: t-hiraizumi@tfu-mail.tfu.ac.jp

Symptom Checklist for Children (TSCC) (Briere, 1996; Nishizawa, Nakashima, & Miura, 1999), which evaluates effects of abuse or other recurrent trauma on children age 8 to 16. In addition to these measures, the Impact of Events Scale Revised (IES-R) (Weiss & Marmar, 1997; Asukai, 1999), which is intended to assess PTSD symptoms in adults following a single episode of trauma, has also been employed in studies of children.

Therefore, there is a growing body of research in Japan regarding measurements of stress in children following disasters. However, a number of shortcomings have yet to be addressed, including a failure to evaluate reliability and validity in these measures (Saito et al., 2005). For example, the TSCC inventory has 54 items. A 44-item version exists which omits items concerning sexual trauma, yet this still falls short of ideal in terms of ease of execution and burden placed on respondents. Some research has attempted to apply the IES-R to children (Asukai, 2006). However, this inventory is intended as a measure of PTSD symptoms in adults. Sufficient evaluation of data obtained about children using this method has yet to be conducted (Saito et al, 2005); thus, we believe prudence should be exercised in choosing to apply this measurement to children. Post-Traumatic Stress Symptoms for Children (PTSSC), which was developed to measure PTSD symptoms, includes the eight-item PTSD factor and seven-item depression factor, thereby ensuring minimal burden on children and easy application. Nonetheless, it is limited by the fact that it specializes in PTSD symptoms and the depression factor; it is potentially restricted from catching children's diverse stress reactions.

In regards to the characteristics of stress responses in children following disasters, Okuyama (2012) reports that children of about 8 years or older exhibit a wide range of responses in addition to the typical responses seen in adults. This includes responses particular to children (vague feelings of uneasiness or regression, physical symptoms), and responses outside of those typically associated with PTSD. Accordingly, to accurately measure stress responses in children following disasters, it is essential that we screen for not only the particular response seen in PTSD but also generally occurring stress responses including anxiety, depression, anger, temper, and autonomic symptoms.

It is with these thoughts in mind that we have developed a comprehensive scale of stress response in children with the aim to maximize the number of factors covered, using a minimum number of items. Our result is the Comprehensive Stress Response Inventory for Children (CSI-C).

The CSI, on which the CSI-C is based, is composed of two scales, one each for measuring general stress response and disaster stress response (Asai, Morikawa, Hiraizumi, Usami, & Wakashima, 2013). Following a catastrophic event, the two scales are employed together, whereas in the absence of a disaster the general stress response inventory is used alone. The disaster stress response inventory is

composed of 8 items and covers 1 factor. In its creation, careful examination was made of existing measures of stress response. Established items characteristic of PTSD were selected for use in the CSI, and additional items pertaining to memory were added to the inventory. The general stress response inventory is composed of 17 items and covers 3 factors (“anxiety and tension,” “temper and anger,” and “autonomic symptoms”). It is intended to evaluate change in the subject’s general stress response over time. Asai et al (2013) investigated reliability and validity of the CSI during its design. Wakashima et al (2016) confirmed cross-validity of the CSI using confirmatory factor analysis in a study of university students who had not been subjected to disaster conditions. The CSI is, therefore, not only capable of the accurate measurement of stress response in subjects who suffered a catastrophic event, but it is also a valid and reliable measure of general stress response in the absence of trauma. However, as no surveys of school-age children have been conducted with the CSI, it is possible that the factorial structure of the CSI differs in children. Furthermore, before the CSI is suitable for use with children, we believe that item content should be carefully constructed in a way that is easy for children to comprehend, and consideration should be given to the reduction of the psychological burden imposed on children when answering the inventory.

To this end, we have modified the expressions used in the CSI inventory such that children are able to respond to them more easily, and have performed a four-factor analysis of the new measure in the same manner as Asai et al (2013). We have further determined cutoff values to differentiate high-stress individuals from low-stress individuals. Finally, our research evaluated whether stress response varies based on age and gender.

Methods

Participants and procedures Surveys were conducted from March 2016 to May 2016. Eligible subjects were those who were first-grade elementary to third-grade high school students located in the Tohoku or Kanto regions of Japan at the time of the Great East Japan Earthquake. A sample of 500 subjects was recruited through Rakuten Research, Inc., an online marketing research company with 2,279,275 registered users as of September 2015. Genders and age groups were equally sampled (for elementary school, 97 boys and 70 girls; for junior high school, 102 boys and 65 girls; for high school, 102 boys and 64 girls). Self-report surveys were administered via the website, and data was collected according to the order in which subjects completed and submitted their surveys. Eligibility for the survey necessitated informed consent from both the subject and the subject’s guardian. The subjects themselves responded to the survey items, with guardian assistance only at the request of the subject.

Basic attributes Subjects were asked about their age, gender, level of school (elementary, junior high, high school), year in school, prefecture of current residence, and prefecture

of residence at the time of the Great East Japan Earthquake (March 11, 2011).

CSI-C The instructions, items, and response options of the CSI were modified to be easier for children to respond to. On the measure of general stress response, the following changes were made: the phrase "In comparison with before…" in item instructions was replaced with "…than I used to." Furthermore, changes in wording were made to items 6 (from "I feel depressed" to "I feel down"), 16 (from "I experience heart palpitations" to "I feel my heart beating fast"), and 17 (from "I feel tense" to "I feel nervous") on the CSI. On the measure of disaster stress response, changes were made to items 7 (from "When I think about the event, the emotions I had at that time well up inside me" to "When I think about the event, the feelings I had at that time come back strongly"), and 8 (from "I experience heart palpitations" to "My heart beats fast"). In this study, the phrase "that event" is assumed to refer to the Great East Japan Earthquake. Response options were also changed: "1 = completely disagree" on the CSI was changed to "1 = not at all", and "4 = completely agree" was changed to "4 = very much." A phonetic guide was added to all kanji characters appearing in items and response options. We consulted with one elementary school teacher and performed a preliminary survey with 83 students from elementary school, middle school, and high school to confirm the suitability of these modifications, and then determined validity based on the presence or absence of missing values.

PTSSC-15 As a measure of comparison, our study used The Posttraumatic Stress Symptoms for Children 15 items (PTSSC-15) (Tominaga, Takahashi, Yoshida, Sumimoto & Kajikawa, 2002). The PTSSC-15 is composed of 8 items to measure for PTSD, and 7 items to measure for depression. Response options use a six-point scale: 0 = completely disagree, 1 = mostly disagree, 2 = partially disagree, 3 = partially agree, 4 = mostly agree, and 5 = completely agree, with a greater number of points indicating a greater degree of posttraumatic symptoms. Koseki, Koseki, Ohtani, & Ito (2013), in order to examine PTSD symptoms resulting from the Great Japan East Earthquake, referred to the survey of traumatic experience in infliction and receipt of bullying by Tominaga et al (2002), and set the criteria for PTSD symptoms at 19 points. Our research uses these same criteria.

DSRS-C Our study also employed the Depression Self-Rating Scale for Children (DSRS-C) (Murata, Shimizu, Mori, & Oshima, 1996). The DSRS-C is a depression screening test designed for children, and is composed of 18 items measuring for depression. Respondents are asked about their feelings over the past week, and items such as "I feel like I want to cry" and "I feel all alone" are self-evaluated using a three-point scale: 2 = always, 1 = sometimes, and 0 = never. The cutoff value on this measure is 16 points.

Ethical considerations Before beginning the survey, all subjects received explanation that answers to all items were voluntary, that they could choose to end the survey at any time,

that the content of their answers would be processed statistically, and that they would not be individually identified. Particular care was given in explaining that questions "pertaining to stress and to your disaster experience in the Great East Japan Earthquake" would be asked, that the subjects were able to discontinue the survey at any time they felt discomfort or difficulty in answering a question, and that there were no consequences for choosing to discontinue the survey. Only subjects who expressed their consent and understanding participated in the study.

Results

Data was analyzed using SPSS ver. 19.0 for Windows and Amos 19.

Internal consistency Cronbach's alpha was calculated for each subscale. Values obtained were α = .92 for "anxiety and tension," α = .90 for "temper and anger," α = .82 for "autonomic symptoms," and α = .94 for "disaster stress symptoms." As all factors demonstrated an alpha coefficient greater than .80, we determined that the CSI-C is a sufficiently reliable measure of stress response.

Confirmatory factor analysis We performed a confirmatory factor analysis to determine the validity of the four-factor structure. As for the criteria for screening, we used *GFI* > .90, *AGFI* > .90, *CFI* > .90, and *RMSEA* < .10. Our results yielded the following fit levels for the four-factor model: *GFI* = .79, *AGFI* = .74, *CFI* = .88, and *RMSEA* = .10. We then adjusted for error variables with consideration given to the modification index. When setting the error covariance, our adjustments were made within a theoretically permissible extent, and we determined a correlation setting among the subfactors. The only adjustments made were to the observed variables comprising each subfactor in order to compensate for error variables. The model's level of fit after these adjustments was *GFI* = .90, *AGFI* = .86, *CFI* = .96, and *RMSEA* = .06, and it therefore met permissible levels under statistical criteria (Table 1).

Concurrent validity To evaluate the CSI-C and its individual subfactors, correlation coefficients were calculated with the PTSSC-15 and DSRS-C (Table 2). A moderate positive correlation was observed between the CSI-C and both the PTSSC-15 and DSRS-C ($p < .001$ for both tests). A moderate correlation was also observed between the CSI-C's subfactors and both the PTSSC-15 and DSRS-C ($p < .001$ for all tests).

Basic attributes and correlation with the CSI-C In order to evaluate whether CSI-C scores or CSI-C subscores varied based on gender or year in school, we performed an independent two-way ANOVA ($p < 0.05$; between-subjects). The independent variables were gender (male, female) and age group (elementary school, junior high school, high school). The dependent variables were the CSI-C scores (four-factor score, three-factor score, "anxiety and tension" score, "temper and anger" score, "autonomic symptoms" score, "disaster stress symptoms" score). This test did not show a significant difference.

Cutoff values As no significant difference

Table 1. Results of the CSI-C confirmatory factor analysis (standardized estimate)

	F 1	*F* 2	*F* 3	*F* 4
Anxiety and Tension (a=.92)				
1. I feel uneasy more often than I used to.	.56			
2. I get scared more often than I used to.	.62			
5. I feel down more often than I used to.	.85			
6. I feel lonely more often than I used to.	.83			
9. I feel sad more often than I used to.	.81			
10. I get angry at myself more often than I used to.	.84			
13. I feel rushed more often than I used to.	.77			
14. I find myself with racing thoughts more often than I used to.	.82			
17. I feel nervous more often than I used to.	.81			
Temper and Anger (a=.90)				
3. I lose my temper more often than I used to.		.81		
7. I feel angry more often than I used to.		.85		
11. I get irritated more often than I used to.		.80		
15. I get offended more often than I used to.		.91		
Autonomic Symptoms (a=.82)				
4. I get headaches more often than I used to.			.72	
8. I feel dizzy more often than I used to.			.76	
12. My stomach hurts more often than it used to.			.64	
16. I feel my heart beating fast more often than I used to.			.81	
Disaster Stress Symptoms (a=.94)				
18. I avoid things that might make me remember the event.				.77
19. I try to keep the event out of mind. (I try not to think about it, ignore it, don't talk about it, etc.)				.78
20. When I think about the event, the feelings I had at that time come back strongly.				.79
21. When I think about the event, my body reacts. (My heart beats fast, I have trouble breathing, I start sweating, etc.)				.86
22. Memories of the event will suddenly pop into my head even when I wasn't trying to think about them.				.86
23. I have bad dreams about the event.				.84
24. I have trouble remembering important details about the event.				.80
25. I find myself feeling or acting like I am back at the time of the event.				.75

Interfactor Correlations	*F* 1	*F* 2	*F* 3	*F* 4
F 1	—	.83	.85	.69
F 2		—	.76	.53
F 3			—	.64
F 4				—

Table 2. Results of correlation analysis of variables (Pearson correlation coefficient)

	PTSSC15			—
	PTSSC-15 Total	Depression	PTSD	DSRS-C
CSI-C three-factor	.62***	.60***	.62***	.50***
CSI-C four-factor	.63***	.60***	.64***	.50***
Anxiety and Tension	.61***	.57***	.61***	.49***
Temper and Anger	.60***	.57***	.60***	.48***
Autonomic Symptoms	.53***	.53***	.52***	.41***
Disaster Stress Symptoms	.51***	.47***	.52***	.40***

*** p <.001

CSI-C four-factor represents the total score for general stress response measure and disaster stress response

PTSSC-15 : Posttraumatic Stress Symptoms for Children 15 items

DSRS-C : Depression Self-Rating Scale for Children

was observed between age group (by school level) and scores as regards the relationship between basic attributes and CSI-C, we considered having one cutoff value covering elementary to high school as age group.

For the purpose of the ROC analysis, the sample was divided into positive and negative groups based on the applicable measure's cutoff value.

Subjects who scored less than 16 points on the DSRS-C were assigned to the negative group (n = 394), and subjects who scored at least 16 points were assigned to the positive group (n = 106). For the PTSSC-15, subjects who scored less th an 19 points were assigned to the negative group (n = 457), and those who scored at least 19 points were assigned to the positive group (n = 43). Because there are few items related to memory on the PTSSC-15, which is a central element of PTSD symptoms (reliving the event, flashbacks), we anticipated the possibility of a false-positive group. To discern the false-positives from true-positives, we used the same procedure as described by Wakashima, Hiraizumi, Kobayashi, Asai, and Noguchi (2015); items on the PTSSC-15 which might suggest the reliving of a traumatic event or flashbacks were identified. These were item 8 ("I avoid people, places, or things that might cause me to remember something painful"), item 10 ("I blame myself; I think bad things happened because of me"), and item 11 ("I think about painful things even though I don't want to"). The total for these three items (from 0 to 15 points) was considered independently, with a score of 0 to 7 deemed false-positive and 8 to 15 deemed true-positive. As a result, the negative group was n = 457, the false-positive group was n = 15, and the true-positive group was n = 28.

In an ROC analysis, a larger area under the curve (*AUC*) indicates more accurate identification of true-positives. According to Swets (1988), an *AUC* value of .60 to .75 may be considered as moderate accuracy, .75 to .90 as good accuracy, .90 to .97 as excellent accuracy, and .97 to 1.00 as ideal accuracy. To determine the ideal cutoff point, we employed the Youden Index.

The average general stress response score for positives on the DSRS-C was 26.49 (SD = 9.07), and $M \pm SD$ was thus 17 to 36 points. The area under the curve (*AUC* = .79) indicated good identification accuracy. Analysis using the ROC curve and Youden Index revealed the ideal cutoff value to be 21 points (sensitivity .623, specificity .827). Based on this cutoff point, the "low general stress response" group scoring under 21 points was n = 366 (73.2%) and the "high general stress response" group scoring at least 21 points was n = 134 (26.8%).

The average disaster stress response score for the true-positive group on the PTSSC-15 was 14.68 (SD = 5.98), and $M \pm SD$ was thus 8 to 21 points. Here too, the area under the curve (*AUC* = .77) indicated good identification accuracy. Analysis with the ROC curve and Youden Index indicated an ideal cutoff value of 12 points (sensitivity .643, specificity .841). Based on this cutoff point, the "low disaster

stress response" group scoring less than 12 points was n = 407 (81.4%), and the "high disaster stress response" group scoring at least 12 points was n = 93 (18.6%).

Discussion

This research developed the CSI-C, a comprehensive measure of stress response in children. We adjusted expressions used in the CSI to be easier for children to respond to, and confirmed the four-factor structure of the measure. This discussion will consider the relationships between the CSI-C's factorial structure, internal consistency, concurrent validity and cutoff values. It will also debate the reliability and validity of the CSI-C as a measurement of stress response in children.

Review of factorial structure The results of the confirmatory factor analysis demonstrate the four-factor structure of "anxiety and tension," "temper and anger," "autonomic symptoms," and "disaster stress symptoms" to be valid. Additionally, as the alpha reliability coefficient was greater than .80, we can conclude that the CSI-C has sufficient reliability as well. These results correspond with the four-factor structure observed in adults following a disaster and with Wakashima et al (2016) study of university students who had not been subjected to a disaster event. Accordingly, we can say that the CSI-C is a measure possessing sufficient factorial validity.

Review of concurrent validity The CSI-C demonstrated moderate positive correlation with the PTSSC-15 and DSRS-C. Furthermore, the subfactors of the CSI-C displayed similar moderate correlations with these criteria. Because of this demonstrated correlation with depression and PTSD, we can say that the CSI-C possesses sufficient concurrent validity.

Review of cutoff values The target of this study was children, which are assumed to differ from adults. Therefore, we chose external criteria specific to children, the DSRS-C and PTSSC-15, when considering cutoff values. Our determined values were 21 points for general stress response and 12 points for disaster stress response. Cutoff values for the CSI as shown in Wakashima et al (2015) were, for screening purposes, 25 points for general stress response (in research, 33 points is recommended when sampling a clinical group with higher stress), and 13 points for disaster stress response. Wakashima et al.'s (2016) additional survey of university students in absence of trauma did not contradict these values. This suggests that the CSI's cutoff values for both types of stress response are stable. Our results in regards to stress response in children following a disaster did not contradict the cutoff values shown in this earlier research focusing on adults.

However, our cutoff values for general stress response were significantly lower than those suggested for adults. This may indicate higher responsiveness in children to items testing for general stress response. In a survey of 395 students from three elementary schools and one junior high school located in Fukuoka Prefecture, the DSRS-C, which was our external criteria for general stress response,

yielded a positive rate of 9.6% (Murata et al, 1996). In contrast, our research, which sampled from among children who were in the Tohoku or Kanto regions at the time of the Great East Japan Earthquake, yielded a positive rate of 21.2%. In light of this difference between stress observed in students within one particular school district (Murata et al, 1996) and in subjects present in Tohoku or Kanto during the Great East Japan Earthquake, we must bear in mind the possibility of difference in our survey and the survey conducted 20 years ago in regards to results yielded by the DSRS-C's measurements (e.g. "I feel like I want to cry,", "I feel all alone").

Conclusions and Challenges

The significance of this research is its substantiation of the CSI-C's four-factor structure. The CSI-C employs a four-factor structure in accordance with prior research, and it demonstrates sufficient validity and reliability as a measure of stress in children. It is capable of gauging both general stress response and disaster stress response. The fact that we could confirm that CSI-C has the same factor structure as CSI for adults suggests that it is a measure that can be applied to a broad range of age groups, ranging from children to adults. However, in this study, we do not consider how assessments are affected by the simplification of CSI items (the possibility that the capacity of CSI questions to discern different symptoms is reduced). In future studies, it will be necessary to conduct examinations using item response theory or comparisons between CSI-C and CSI on adults with language ability as a way to verify the accuracy of CSI-C.

Moreover, this study is significant in that we set a cutoff value to discern between high- and low-stress individuals. Our external criteria were different from those in Wakashima et al (2015) as our study involved children, but our results were in line with previous findings in terms of the cutoff value for disaster stress response. These results should also be examined using corresponding data from an actual clinical group.

The instructions for the CSI-C disaster stress measure take the format of listing disaster contents relating to stress response. The disaster contents include not only natural disaster but man-made disasters (experiences of abuse and bullying, traffic accidents, and other specific traumatic experiences) as well. As such, CSI-C can be applied in classrooms where an emergency has taken place and to assess children's specific traumatic experiences. Moreover, in cases where there is no specific disaster content, the general stress response measure can be used by itself by separating disaster stress response from that measure, as with CSI.

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Appendix 1. Japanese version of Table 1

Results of the CSI-C confirmatory factor analysis (standardized estimate)

	F 1	*F* 2	*F* 3	*F* 4
不安・緊張 (*a* =.92)				
1. 前よりも，不安になる	.56			
2. 前よりも，びくびくしている	.62			
5. 前よりも，落ち込んでいる	.85			
6. 前よりも，さみしく感じる	.83			
9. 前よりも，悲しいと感じる	.81			
10. 前よりも，自分のことが嫌になる	.84			
13. 前よりも，焦っている	.77			
14. 前よりも，考えがまとまらない	.82			
17. 前よりも，緊張している	.81			
不機嫌・怒り (*a* =.90)				
3. 前よりも，不機嫌になる		.81		
7. 前よりも，怒りと感じる		.85		
11. 前よりも，いらいらする		.80		
15. 前よりも，不愉快な気分になる		.91		
自律神経症状 (*a* =.82)				
4. 前よりも，頭痛がする			.72	
8. 前よりも，めまいがする			.76	
12. 前よりも，お腹が痛くなる			.64	
16. 前よりも，ドキドキする			.81	
災害時特殊ストレス症状 (*a* =.94)				
18. そのことを思い出すものには近寄らないようにしている				.77
19. そのことには触れないようにしている（考えない、そう思わない、話さないなど）				.78
20. そのことを思い出すとそのときの思いが強くなってくる				.79
21. そのことを思い出すと、身体が反応する （ドキドキしたり、呼吸が苦しくなったり、汗が出るなど）				.86
22. 考えるつもりはないのに、そのことがいきなり頭に浮かんでくる				.86
23. そのことについてよくない夢をみる				.84
24. そのことの重要な部分をうまく思い出せない				.80
25. 気がつくと、そのときに戻ったように感じたり、ふるまっている				.75

因子間相関	*F* 1	*F* 2	*F* 3	*F* 4
F 1	—	.83	.85	.69
F 2		—	.76	.53
F 3			—	.64
F 4				—

数値は標準化推定値

GFI=.90, *AGFI*=.86, *CFI*=.96, *RMSEA*=.06

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Advantage of empty-chair dialogue over emotion-focused couples therapy for a Japanese couple with marital infidelity: A case study

Kenji Yokotani[1)]

1) Niigata Seiryo University, Graduate School of Clinical Psychology

ABSTRACT. Couples with marital infidelity have received many therapies, but the effective therapies for them were still unclear. The present case study utilized Emotion-Focused Couples Therapy (EFCT) and Empty-Chair Dialogue Intervention (ECDI) for a couple with marital infidelity and aimed to show advantages of ECDI over EFCT. Our case was a Japanese heterosexual couple with husband's infidelity. The husband also had alcohol abuse and bipolar disorder, whereas the wife assaulted him physically. During the first 6 monthly sessions, they were peaceful but wife's physical assault suddenly occurred and interrupted the therapy. During the next 5 monthly sessions, EFCT was applied for them, but his hypomanic episode and her physical assault disturbed their emotionally responsive communication during the sessions. During the last 5 biweekly sessions, ECDI was applied for the wife. She imaginary dialogued with the husband's extramarital lovers, rather than the husband. During the ECDI sessions, she had been able to fall asleep during night and her physical assault on him had been disappeared. Even after the three-year follow up since the ECDI session, her physical assault and his marital infidelity had not occurred. Comparative advantages of ECDI over EFCT were discussed.

KEY WORDS: Marital infidelity, Empty-Chair Dialogue Intervention, Wife's Physical Assault against husband, Bipolar disorder, Emotion-focused Couples Therapy

Advantage of empty-chair dialogue over emotion-focused couples therapy for a Japanese couple with infidelity: A case study

Marital infidelity is a social problem. One partner's infidelity injured the other partner's feeling (Halchuk, Makinen, & Johnson, 2010), increased the injured partner's risk of major depression (Cano & O'leary, 2002), and finally ended their marital relationships (Previti & Amato, 2004). Couples with infidelity received many therapies, but effective therapies for them were still unclear (Blow & Hartnett, 2005). Most of them received the Empty-Chair Dialogue Intervention (ECDI) (Paivio, 1999; Paivio & Greenberg, 1995) or Emotion-Focused Couples Therapy (EFCT) (Greenberg & Foerster, 1996; McKinnon & Greenberg, 2017). However, direct comparison of them was still rare. The present study compared the effects of them for a Japanese couple with infidelity.

CORRESPONDENCE TO: Yokotani Niigata Seiryo University, Graduate School of Clinical Psychology, 1-5939, Suidocho, Chuo-ku, Niigata-shi, Niigata, 951-8121, Japan
e-mail: yokotani@n-seiryo.ac.jp

Empty-Chair Dialogue Intervention (ECDI) and Emotion-Focused Couples Therapy (EFCT) for a couple with infidelity

The ECDI, in which a client engages in an

imaginary dialogue with the person sitting in the empty chair (Paivio, 1999), was originally from Gestalt therapy (Perls, Hefferline, & Goodman, 1951) and has been utilized and validated in many therapies (Pugh, 2016). ECDI encourages clients to access their previously avoidant memories/thoughts and to reconstruct them in the therapy-provided safety environment (Timulak & Pascual-Leone, 2015). The ECDI exposes clients to their intense emotion, which has been avoided for long term (Greenberg & Foerster, 1996), so that ECDI is useful for clients who avoid specific emotions for long term, such as those with posttraumatic stress disorders (Steenkamp et al., 2011).

ECDI is especially effective for people who had unresolved issues with significant other, because they had continued to avoid their primary emotions about the issues (Steinmann, Gat, Nir-gottlieb, Shahar, & Diamond, 2017). One randomly controlled trial reported comparative efficacy of ECDI for community sample who had lingering unresolved negative feeling with the significant other, such as ex-partner, from the past (Paivio & Greenberg, 1995). Those who received 12-week ECDI sessions significantly reduced their interpersonal distress and resolved their unresolved issues than those who received 12-week psychoeducation sessions about the unresolved issues. Another randomized controlled trial also found that single ECDI session was more effective in reducing the anger for university students who had persistent anger toward their significant other than single emphatic listening session regarding their anger (Narkiss-Guez, Zichor, Guez, & Diamond, 2015). Another quasi-controlled study also found that 7-week group ECDI sessions were effective in reducing traumatic experience and avoidant behaviors for wives whose husbands were either killed or missing during the war (Hagl, Powell, Rosner, & Butollo, 2015). Another longitudinal study indicated the effects of ECDI in reduction of depressive symptoms for individuals who experienced the death of their spouse (Field & Horowitz, 1998). These findings indicated that ECDI could be useful for the unresolved issues with significant other.

Marital infidelity can cause an unresolved issue with significant other in marital relationship. One partner's marital infidelity injured partner's feeling (Halchuk et al., 2010) and increased the injured partner's risk of major depression (Cano & O'leary, 2002). These findings indicated that the injured partner could have lingering unresolved negative feeling, such as anger, with their partner (Johnson, Makinen, & Millikin, 2001). Actually, several individuals reported unresolved issues with their romantic partner who did infidelity (Narkiss-Guez et al., 2015; Paivio & Greenberg, 1995). One case study also utilized the ECDI for a husband whose wife had extramarital affairs (Paivio, 1999). These findings indicate the applicability of ECDI for marital infidelity.

Based on the ECDI findings, EFCT was developed for couples with infidelity, where the offending partner repetitively apologizes about one's misconduct and the injured partner finally forgives his misconduct (Greenberg, Warwar, & Malcolm, 2010). The EFCT is effective if

couples meet following two conditions: (1) offending partner expresses their vulnerable emotion to their partner (McKinnon & Greenberg, 2017; Meneses & Greenberg, 2011, 2014): (2) the injured partner also forgives the partner's misconduct (Halchuk et al., 2010). Yet, satisfaction of these two conditions is not easy for many couples (Greenberg & Foerster, 1996). Forgiving extramarital affair was still the most difficult task for couples(Kluwer & Karremans, 2009). Hence, therapy effects of EFCT on marital infidelity are still limited (Blow & Hartnett, 2005; Wiebe & Johnson, 2016).

Aims of the present study

Previous study showed the effectiveness of ECDI and EFCT for couples with marital infidelity (Greenberg et al., 2010; Paivio & Greenberg, 1995). However, direct comparison of ECDI and EFCT was rare, so (dis)advantages of ECDI over EFCT are still unclear. Further, the effectiveness of ECDI and EFCT were mainly confirmed in Caucasian couples (Greenberg & Foerster, 1996; Hagl et al., 2015). Marital infidelity patterns were reportedly different from European to East Asian couples(Moore, 2010; Schmitt David P., 2004). Hence, the applicability of ECDI and EFCT for East Asian couples is also unclear. Moreover, couples with alcohol abuse, marital violence and bipolar disorders were excluded from the sample in EFCT (Greenberg & Foerster, 1996; McKinnon & Greenberg, 2017; Meneses & Greenberg, 2011) and ECDI (Field & Horowitz, 1998; Narkiss-Guez et al., 2015; Paivio & Greenberg, 1995; Steinmann et al., 2017) studies: The applicability of EFCT and ECDI for couples with these severe problems is unclear. Clarification of these three points could extend the clinical scope of EFCT and ECDI to an East Asian couple with multiple severe problems. Hence, our research question is that Are ECDI and EFCT effective for a Japanese couple with marital infidelity, alcohol abuse, marital violence, and bipolar disorders? To answer this research question, we utilized case study for a detailed description of ECDI and EFCT on the Japanese couple with these problems. ECDI findings were more robust regarding experimental designs than EFCT(Paivio & Greenberg, 1995), so we hypothesized that ECDI would be more effective for a Japanese couple with these problems than EFCT. Our case study involves four stages. The first stage aims to build couple alliance and therapeutic alliance as foundation of couple therapy (Timulak & Pascual-Leone, 2015). The second stage applied EFCT. The third stage applied ECDI. Although previous study of ECDI focused on actual injured partner (Paivio, 1999), we focused the partner's extramarital lovers, rather than the partner. This is because physical violence from her to him was severe so that we need to divert the target of her anger from him to other individuals. The final fourth stage is follow-up sessions for 3 years.

Case Description

Basic information

Identified patient and client (January X year): Identified Patient was a husband who

was 31 years old and worked for a sake brewer. Client was his wife who was 43 years old and housewife. They had a son aged 5 years old with Autism spectrum disorder. They lived in the P city of Hokuriku district in Japan since their marriage (X-9 year). The wife's parents had a large house and land so that their house was in the garden of the parents' house.

Main agenda: The wife wanted to talk about her husband's extramarital affair, whereas the husband wanted to talk about his alcohol-related problem. During initial session, main agenda was inconsistent between the wife and husband.

Case history

Family history: The husband's mother was the last stage of stomach cancer (died in July X year). His father also had extramarital affairs when the father was young. Both of their parents and sibling lived in the P city so they frequently met with each other. For example, the wife's sister visited a hospital to see the husband's mother.

*Life history***:** The husband lived in the P city until his high school days and lived alone in Kanto area during his college days. After he had graduated from his university, he returned to the P city, worked at the sake brewing company, and got married. He had never been pointed out any particular problem so far. The wife also lived in the P city and had never left the P city. After graduating from her university, she was doing a few jobs. After marriage, she quitted her job and became a housewife. During her first pregnancy (X-6 years), she became uterine fibroids but gave birth to her son. During her second pregnancy (August X-1 year), she became anemia and decided to abortion. She had never been pointed out any special problem so far.

Problem history: In X-4 year, the husband had an affair with the married woman (referred to as C) in his neighborhood. He repetitively came back to home at early morning so his neighborhood rumored about him. Finally, his wife detected his extramarital affair with the woman. She smashed the husband several times. In June X -1 year, the husband failed the exam in the brewery company. In September X-1 year, he suddenly yelled at his child, which had never been occurred. He also drank daily until 3 o'clock in the morning. In November X-1 year, the husband and wife received one therapy session in a local Q hospital. He was diagnosed as bipolar disorder type II with hypomanic episodes. During the therapy, he said to her wife that "I do not like you!" and "I do not need you!" After the therapy, they decided not to visit the hospital again because his friend worked in the same hospital despite of their positive attitudes to the therapy. After a while, the wife found that the husband bought a ring to give to his extramarital lover and pointed out it to him. He stopped giving the ring to the lover but presented the same ring to the wife. When she had not used the ring, he got angry. In December X-1 year, recommended by a local health nurse who mainly care about their son, they visited an R hospital. A psychiatrist said that the husband had no problem and would recover in short. Yet,

in December X-1 year (before New Year's Day), the husband's brother, the wife's brother, and the husband's friend witnessed a scene where the husband goes to a hotel with another woman (referred to as B) by chance. With this incident trigger, his friend also reported the wife about his extramarital affair with another woman (referred to as A). The wife could not control her anger and had continued to smash the husband for several hours. He had been receiving her punch without any counterattack for the hours. Since then, he frequently reported lots of things to her. In January X year, the wife alone visited author's therapy center and another therapist met her. Although her friends and family members recommend her to divorce, she did not want to divorce because of her child and money. She knew the days when her husband was good, so she wanted to continue her marital relationship with him as far as she could. Her husband was also positive about couple therapy. Then they started to receive monthly couple joint therapy in charge of the author. The husband has received medication (lithium carbonate and Olanzapine) for his hypomanic episode from the S hospital since March X, but the wife did not receive any medication.

Initial session [#1] (February X year): During couple joint session, they had no eye contact with each other so that they had a long silence to change their turn. The wife liked to talk about his extramarital affair in the therapy. However, the husband said "I did an affair, but I do not feel any guilty. The extramarital affair is like a game." "I like to talk about my alcohol use". Wife said that "If he returns to the previous status, I like to continue my relationship with him". The husband said that "I do not know how to return to the previous status. I am nearly forgiving up relationship with her". Although they fought every day, they confirmed that they cooperated to come here without fight. The therapists asked them to come here again, because their communication to come here was cooperative without fight.

Therapy Process

Stage 1: Building Couple Alliance

The first case formulation: Any topic could produce their fight except for the topic about couple therapy. Hence, first stage tried to decrease their fight, to increase cooperative communication, and to build couple alliance between them (Bodenmann, Hilpert, Nussbeck, & Bradbury, 2014). After the couple built alliance, the therapy can set their main agenda consistent between the husband and wife. In addition, the therapists aimed to build therapeutic alliance with them, which was foundation of many psychotherapies (Paivio & Greenberg, 1995; Timulak & Pascual-Leone, 2015).

#2(February X year): Compared to previous session, the wife and husband had eye contact with each other. Actually, they went out in this weekend with their son. Still, the husband sometime said at home that "I am working hard for the child, but not for you." She also said that she could not trust him because he was nice to her in the therapy room but arrogant to her in their house. The couple communication

seems to be better than the initial session.

3(March X year): The husband said that marital relationship became peaceful. The wife acknowledged her peaceful marital relationship with him, but she was anxious about how long this peaceful relationship continued. Both of them liked to talk about “peaceful life in their family (including the husband, wife and son)” in following session. Their main agenda consistent between them was decided as “the peaceful family life”.

#4(April X year): Couple was mostly peaceful, but they had a fight one time and she smashed him during driving. The therapists normalized their fight.

#5(April X year): The husband drank alcohol even though he pledged to quit alcohol in front of her. During his drunk, he made a pass at a woman. Even after he became sober, he did not stop making pass at the woman, because he did not want to miss the opportunity to have a sex with her. The wife said “I cannot understand the meaning of your opportunity!” His alcohol-related relapse triggered his fainting, rough attitudes, and their fight.

#6(May X year): The first half in the April was peaceful, but the second half got worse for both husband and wife. During the second half, the husband started to counterattack to his wife’s smash. When their son fell asleep around 11 o'clock, the wife every day started to ask the reason why he made marital infidelity. He responded to her for an hour and tried to go to bed because of the next day's work. Then, she became angry and said "Why you cannot take time for our communication even though you can take time for extramarital sex!" Then, she asked about how he cheated up until 3 and 4 o’clock in the morning. The husband tried to answer at the beginning of discussion, but he cannot see the end of the discussion, his sleepiness won, and finally he said "I do not know" "I forgot" and ignored her questions suddenly. Then, the wife’s frustration had more accumulated. The husband also did little work due to lack of sleep. Destructive communication was too much in the couple so the therapists intervened in the communication and proposed to restrict their time for discussion within an hour per day. Further, their intervention is necessary to prevent escalating their fight to severe physical violence. The husband accepted their proposal, but the wife got angry. The wife’s anger exploded suddenly and damaged their marital communication.

Interruption period

After the sixth session, they had made appointment monthly, but they cancelled the appointment the day before the therapy. Their cancels continued from July to August X year. During these months, husband’s mother and uncle passed away one after another so they were actually busy preparing for funerals and could not come to the therapy. Still, their cancellation was also repeated in middle of the September. Hence, the therapists supposed that the wife had hostility toward the therapists who did not understand her anger. Therapists made appointment with her via telephone and reported that they felt sorry that they did not help her nicely. Then, they revisited the therapy

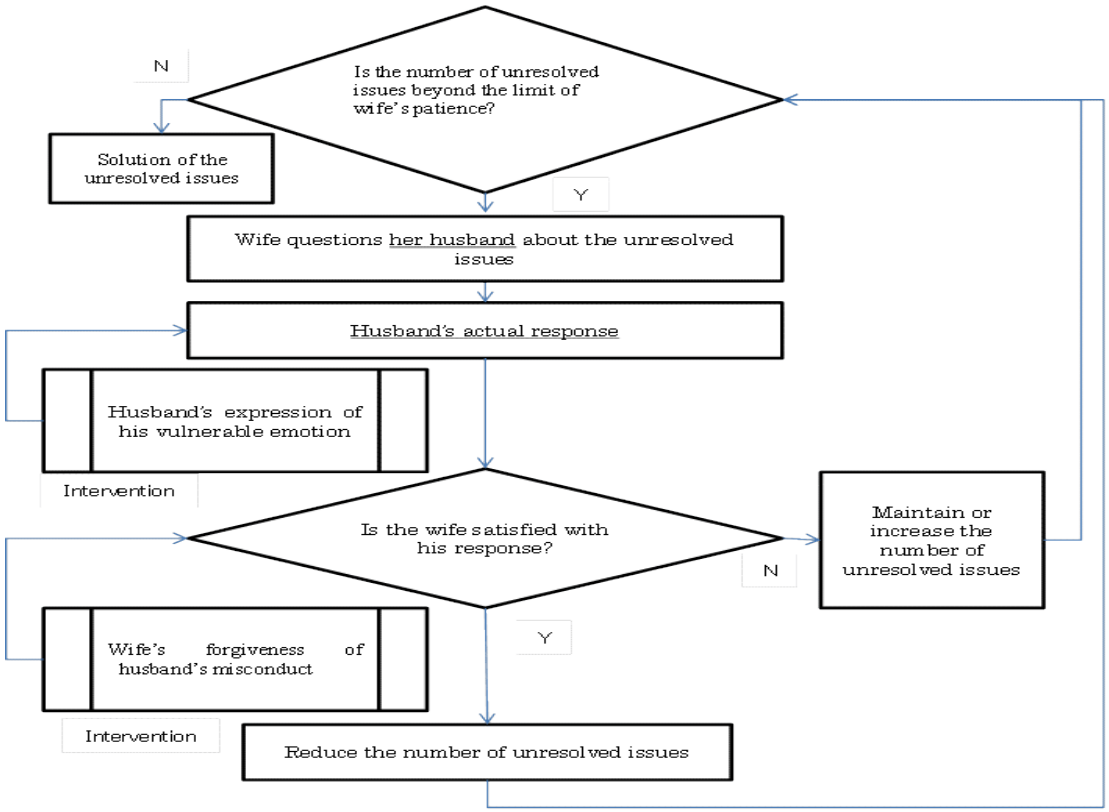
center.

Stage 2: Emotion-focused couples therapy (EFCT)

The second case formulation: The first stage focused cooperative couple communication, but not wife's unresolved issues caused by her husband's infidelity. To treat her unresolved issue, we utilized EFCT (Figure 1). The second stage aimed to increase husband's expression of vulnerable emotion and to produce her

forgiveness on his infidelity in the context of emotionally responsive couple communication (Greenberg et al., 2010; McKinnon & Greenberg, 2017). When the wife satisfied with emotionally responsive couple communication about the husband's infidelity, the number of her unresolved issue about the infidelity would decrease and finally resolve (Figure 1)

#7-#8(November X year): The wife's anger exploded again because she recalled the November X-1 year where his marital infidelity was repeated. When her heart felt rough, she kept hitting her husband for 1-2 hours. Her hitting and rough feeling lasted 3 days and one week, respectively. She said "My husband does not understand anything though I feel such a suffering." He said that he liked to be patient for her smash because the smash was caused by

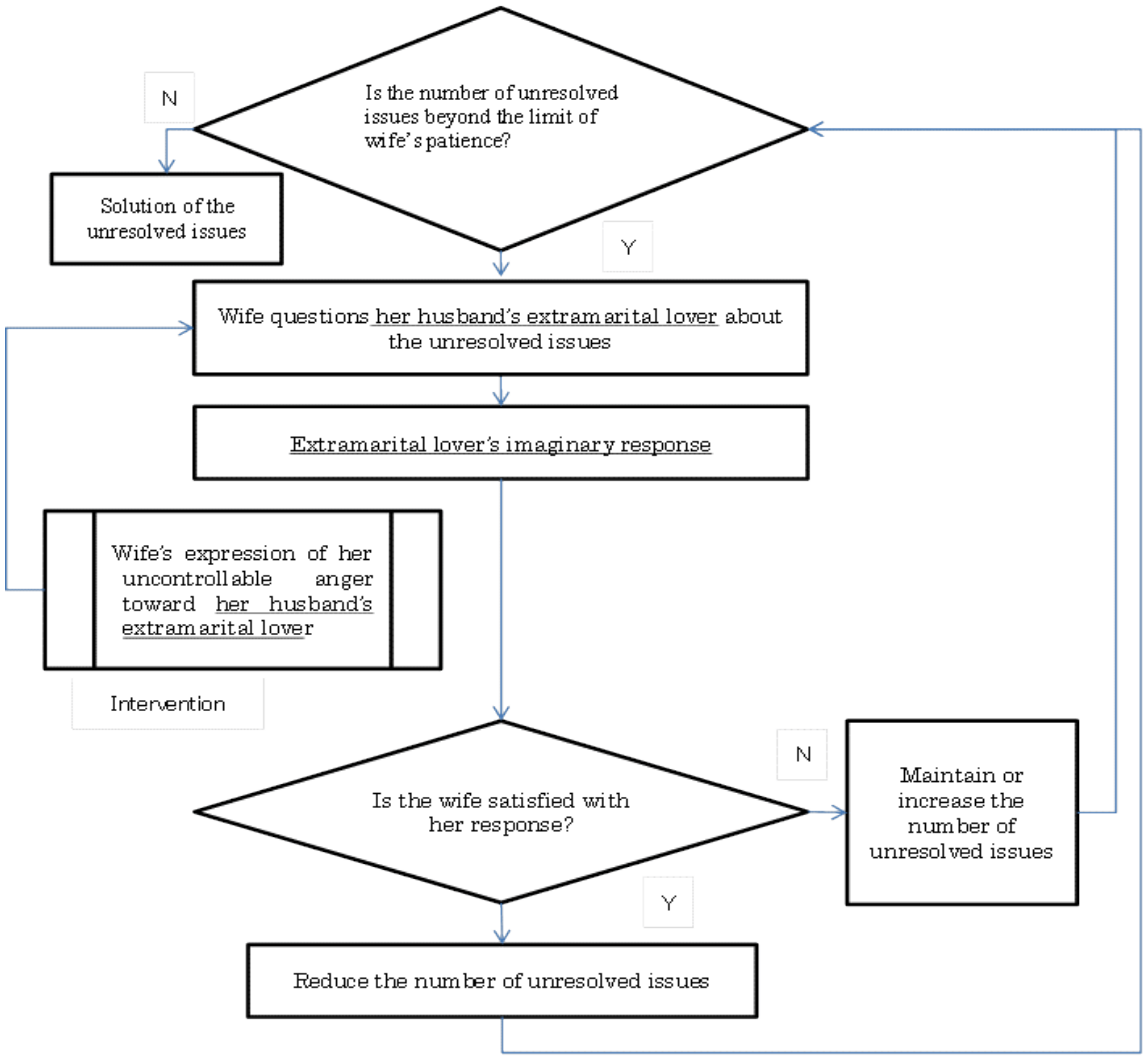


Note: Y and N represent Yes and No, respectively

Figure 1 Wife's unresolved issues with her husband's marital infidelity and emotion-focused couple therapy approach

his infidelity. He also appreciated her every day's work in house. The husband tried to keep calm, but the wife did not. Her anger on his marital infidelity was under-regulated again. Although therapists noticed her aggression against him was severe physical violence, therapist intervention on her aggression failed in the last session (#6), so therapists did not intervene in her aggression directly. Therapists empathetically listened to her emotion to calm down her aggression and to stop her physical violence indirectly.

#9(December X year): Their fight occurred in front of their son so that the son had started to suffer nightmare since the fight. The husband tried to select his word before he spoke



Note: Y and N represent Yes and No, respectively

Figure 2 Wife's unresolved issues with her husband's marital infidelity and empty-chair dialogue intervention

especially when he was angry. He said “The past is the past. We like to live peacefully in future.” Still, the wife did not forgive his past and could not imagine peaceful future. The husband and wife had a big gap in their recognition about his infidelity. Although therapists noticed their fight in front of their son is psychological violence, therapist intervention on her aggression failed in the previous session (#6), so therapists did not intervene in their fight directly. Therapists empathetically listened to their emotion to calm down their aggressions and to stop their fight indirectly.

#10(February X+1 year): The wife reminded that the husband concentrated on TV and comics too much to care his son, so she started to attack him in the therapy room. When she heated up, he turned to pale. Her repetitive violence to him might shrink his feelings. His honest expression of his feelings in front of her might be difficult.

#11(May X+1 year): The wife became anxious about her son’s school life, because his classmates might tease him because of his father’s marital infidelity. When she thought about the son’s future, she thought “Everything had no value”. On the other hand, the husband said that he could enjoy weekends so he did not feel any problem. After the last session, he became hypomanic and said “I tell a lie in the couple therapy. All what I said in the therapy is a lie”. The wife’s and husband’s expectation about their family was different from each other, so that the therapy needed to reset another main agenda, which would be consistent between them.

Stage 3: Empty-chair dialogue intervention (ECDI)

The third case formulation: We thought that EFCT did not fit well with this couple because of two reasons. First, the husband had been received physical and psychological violence from his wife, so he had difficulty to express his weakness in front of her, since his weakness might be a target of her attack. Second, when he became hypomanic, he said “All what I said in the therapy is a lie” so that the wife cannot trust his words in the therapy and could be difficult to forgive him in the therapy.

To overcome these limitations, we utilized ECDI for the wife and encouraged her imaginary dialogue with her husband’s extramarital lovers, rather than the husband (Figure 2). During her imaginary talk with the lovers, her anger could focus on the lovers, which could reduce the risk of her violence on him. Furthermore, she could express her uncontrollable anger as she liked (Paivio, 1999) regardless of his hypomanic mood. When the wife is satisfied with aggressive communication with her husband’s extramarital lovers, the number of her unresolved issue about the husband’s infidelity would decrease and finally resolve (Figure 2). For ECDI session, therapy structure was changed. The first 40 minutes was for wife’s individual ECDI. The last 10 minutes was for couple joint session to confirm the effects of ECDI and to keep the husband to be cooperative with her. The therapy also held biweekly.

First picture (3-1) Second picture (3-2) Third picture (3-3)

Figure 3 Wife's drawing pictures regarding her husband's extramarital lover

#12(July X+1 year): During ECDI, she started to attack the woman A verbally. When she stopped her verbal attack on A, the therapists said "Your anger is not such a small degree. Please show your anger more." and encouraged her to continue to attack her in order to treat her unresolved issues with A. She said "Yankee who lives in the town" "I feel like I've been caught for a long time by you" "I want you to avoid us" "I do not want you to see us even for one second" "You cannot understand us because you are stupid." "Idiot is poor thing. Can you understand the meaning of idiot? This idiot (lol)" She expressed her strong anger toward A. She also started to attack the woman B who aged 20's. She had 5 or 6 extramarital affairs even though she had a child. The B would say "Marital infidelity is not always from me. Your husband is also bad". Then, the wife said "You are always flipping" "You are absolutely wrong regardless of other men's behavior." "You seem to be hiding marital affairs to your ex-partner. I will show him your affairs." Then, she would ask the wife to forgive her for paying, but the wife would not forgive her. "I will never forgive your misconducts. I will inform your husband about your affairs. You will be receiving domestic violence from him. Then you have been kicked out from his house and you will die on the street. Die!" She also expressed her anger toward B.

#13(August X+1 year): The wife had a good sleep after a long time. The husbands also regarded that she calmed down. Her expression of anger in ECDI could work in this couple. She was satisfied with her expression toward A and B so she started to imagine the woman C. She was the wife's sister's colleague. She had done bad things always and been familiar with extramarital affair since her school days. The wife asked her to stop approaching her husband, but she did not quit. Even though therapists asked the wife to have imaginary dialogue with

her, she did not.

#14(August X+1 year): The wife could sleep well. The frequency of couple fight was also decreasing. During ECDI targeting the woman C, the wife talked to the therapists rather than C. “She has children, so I cannot get angry with her.” “I am not good at her. So I cannot get angry.” Then, finally, she said “Perhaps, I was bad (rather than her).” The therapists intervened in the imaginary dialogue and said “It is impossible that you are bad. This case is 100% bad for C, so please be angry with C”. Still, she did not express her anger toward her, and finally told “It is difficult." ECDI targeting C might not work for her.

#15(September X+1 year): The frequency of their couple fight on marital infidelity became only one time per month. The fight also lasted only 10 minutes. She continued to have good sleep during night. During the wife’s individual session, we asked her to draw picture about the Woman C, instead of ECDI. The first picture was simply painted with black crayon (Figure 3-1). We asked again to draw C. Then, she drew a colorful figure. Then, we asked her to attack C. When she stopped the attack, we asked her to continue to attack the woman until there is no space in the paper. Figure 3-2 shows the final version of the second picture. The C’s neck was cut by her favorite son. She also entered in a tomb. The tomb had graffiti and bird droppings. The tomb smelled around. After she finished drawing, she made a smile and said "It's funny." The therapists told "This is a very tasty picture" and laughed together.

#16(October X+1 year): She drew the third picture on C (Figure 3-3). The attack on C was going well. The attack was also translated into language, such as "die”, “dirty”, “stupid”, “your Japanese language is strange”, “sick”, “crazy”, and “hell" (Figure 3-3). After she finished drawing, she said “my angers on A, B, and C were completed.” After this session, the therapy structure was restructured as to be a monthly joint couple therapy.

Stage 4: Three-year follow up

#17-21(from October X+1 year to March X+2 year): The husband tried not to meet A (Yankee). The B’s house was his commuting road, so he decided not to use the road. When the wife got to meet C by chance, she recalled the bad memory and asked the husband about his past extramarital affair. Then he answered it calmly. Therefore, they discuss recently, but the discussion never developed into a fight. The therapists proposed the end of couple therapy, but they liked to continue the therapy. Hence follow-up sessions were conducted around bimonthly.

#Follow-up sessions (from September X+2 year to September X+4 year): The therapists have been following up the couple for three years and have not confirmed any special problems since the ECDI sessions. The agenda of their couple therapy is mainly about school support for their son with Autism spectrum disorders. During follow-up, couple requested compensation for damages against the husband's extramarital sex partner. Even though the sex partner and her lawyer took a high-pressure attitude to them, the couple

successfully responded and succeeded in receiving the consolation fee.

Discussion

The present study compared the effect of ECDI and EFCT for a Japanese couple with marital infidelity, alcohol abuse, marital violence, and bipolar disorders through a case study. As hypothesized, ECDI were more effective for the Japanese couple with marital infidelity and multiple severe problems than EFCT. This might be from different requirements during therapy sessions between EFCT and ECDI. EFCT in this case requires the husband to express his vulnerable emotion toward her and the wife to be patience to forgive his marital infidelity during session(Halchuk et al., 2010; McKinnon & Greenberg, 2017; Meneses & Greenberg, 2011, 2014). In contrast, ECDI only requires the wife to imagine her husband's extramarital lover (Paivio & Greenberg, 1995). Comparison of these requirements between EFCT and ECDI suggest that couple feel easy to receive ECDI rather than EFCT (Greenberg et al., 2010; McKinnon & Greenberg, 2017; Meneses & Greenberg, 2014). Hence, ECDI's applicability for couples might be greater than EFCT. In other words, couples who are not applicable to EFCT could be applicable to ECDI, but not the other way around.

Further, Japanese cultures might have negative effects on implementation of EFCT. This is because Japanese couples reportedly showed less emotion than Caucasian couples (Safdar et al., 2009). Japanese husbands especially expressed less vulnerable emotions (such as fear and sadness) to their wives than their wives expressed to them (Safdar et al., 2009). When therapist implements EFCT for this couple, husband's expression of his vulnerable emotion is essential (Field & Horowitz, 1998; Hagl et al., 2015; Narkiss-Guez et al., 2015; Paivio & Greenberg, 1995): His emotional expression is a key in many couple therapy (Snyder, Mangrum, & Wills, 1993). However, Japanese husband's expression of his vulnerable emotion is culturally restricted (Safdar et al., 2009). Hence, Japanese couple with husband's extramarital sex might be difficult to apply EFCT, even though the couples with husband's extramarital sex were dominant in Japan (Moore, 2010).

The ECDI also could be useful for distressed couples with bipolar disorders. Bipolar disorders were significantly correlated with marital distress (Whisman, 2007). Spousal hypomanic episodes sometime ruins what couple has built up until then. In our case, the husband said to his wife "All what I said in the therapy is a lie". After listening to these words, she could not trust his words in the couple-joint therapy and the impact of the therapy on their couple relationship could be minimized. Effective therapies for family with bipolar disorders frequently separated the family members from the patients with bipolar disorder, although the patient receive medication individually (Geddes & Miklowitz, 2013). In line with these therapies, ECDI separate the wife from the husband with bipolar disorder. ECDI might be effective for spouses

who suffered from both their partners' bipolar episodes and marital infidelity.

However, our study has limitations regarding academic and clinical methodology. First, our study was single case design so the generalizability of our findings was limited. Further, we did not control the effects of order. The order of session (ECDI first or EFCT first) might have different treatment effects on our couple. Future study needs more couples and randomized research design. Second, our case also missed risk management of family violence during EFCT sessions. Actually, wife's physical violence against her husband and couple's psychological violence against their sons frequently occurred during the sessions 7, 8 and 9. To stop these kinds of violence, therapists needed an earlier decision to change their case formulation and interventions. Incidence of family violence should be considered more severely in future case studies.

Despite these limitations, this study is the first approach, at least our knowledge, to compare the effect of ECDI and EFCT for a Japanese couple with marital infidelity and multiple problems including bipolar disorder, alcohol abuse and marital violence. The ECDI treated the wife's under-regulated anger through therapists' emphatic attitudes. During the ECDI session, the wife could repetitively experience her anger toward him as she liked, which never happen in her actual life because her angrily discussion was too long to finish. Expression of her under-regulated angry might help her to reorganize her emotion (Paivio & Greenberg, 1995). Moreover, ECDI focused on their partner's lover also could treat their uncontrollable anger and reduce the risk of their physical assault on their partner. Actually, after the ECDI in our case, wife's violence against her husband was disappeared. Previous study reported effectiveness of ECDI with a few evidence (Paivio, 1999; Paivio & Greenberg, 1995; Pugh, 2016). Accumulation of ECDI evidence for couples with marital infidelity could propose an effective therapy plan for couples with marital infidelity and contribute to reduce their suffering.

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