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

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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 caregiving, 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
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 (Romijn, 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").

3 Zarit 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
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 $24.17 \pm 3.91$ 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 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                      |

The opponent young carer provide the care (including multiple answers)
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
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".

| 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                     |                         |                       |

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

### Table 4: The care acts responsible as young carer (including multiple answers)

| Care acts responsible                                                                 | 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                     |

(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
| Item   | Item description                                                                 | I   | II  | III | IV | V  |
|--------|----------------------------------------------------------------------------------|-----|-----|-----|----|----|
| 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 members | .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 do (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|
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
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 $\alpha$ 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
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"

| 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 illness/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      | -     | -     | -      |
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

| No | Item |
|----|------|
| 5  | 私は家族を助ける必要があり、学校や仕事の休憩時がある。 |
| 14 | 家族を支えることで、勉強や仕事に手が付かないとき、疲れ果て、多忙であると感じることがある。 |
| 23 | 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。 |
| 5  | 家族の手助けをすることで、自分がやりたい・したい多くのことが妨げられている。 |
| 6  | 私がより多くの責任を受けなければならない、私の家はバラバラになってしまいそう。 |
| 24 | 私が家族は、私が家事全般を手にこなすこと頼っている。 |
| 25 | 私の家族は、買い物や家族管理の面で私が頼っている。 |
| 16 | 私は家族の世話をしなければならない。 |
| 26 | 私の家族は、家族全体が手にさまっているかを確認するチェック役を私に頼っている。 |
| 21 | 自分がしたいことに使う時間はたくさんある。 |
| 10 | 家族を助けていることは、私が有能の仕事に就くことの妨げになっている。 |
| 7  | 自分の家の事情のために、私は多くの活動をやめざるを得ている。 |
| 1  | 私は家族のことを心配している。 |
| 8  | 私は常に家族の不安を気にかけている。 |
| 19 | 私は家族の身にまがり枕を枕をしている。 |
| 11 | 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 | 私の家族は、彼女のケアを手伝うことを、私に頼っている。 |
| 12 | 私の家族は、彼らの家族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 | 私は、他の家族の人達と比較して、より大人びており、より成熟している。 |
| 17 | 自分は、他の同年の人達よりも、より大人びて思っている。 |
| 13 | ひとりぼっちであると感じることがある。 |
| 4  | 自分の気持ちや心配事について話せる人がいたと感じる。 |
| 22 | 他人は、私のことや私が面っている状況を理解していない。 |
| 2  | 私は同年代の人たちに比べて、家族問題のことで、より多くの責任を負っている。 |
| 9  | 自分は、同年代の人達に比べて、家族の依頼に関して、より多くのことをしている。 |
| 18 | 私は、同年代の人達がするような事柄を経験する機会を避けていくと言っている。 |
Appendix 2
Young carer psychological scale Japanese version Part B

| No |  |  |
|----|---|---|
| 14 | 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 | 家にいて手助けをしない時は、後ろめたさを感じる。 |  |
| 2 | 私は家族成員の疾病や障がいを隠す気をしないと感じている。 |  |
| 7 | 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 | 外出し慣れていると、エリート気分になる。 |  |
| 6 | 家族成員への援助を、今よりも少なくて良くなれば良いのにと思う。 |  |
| 16 | ケアに関しての助けが必要な時、他人にケアの手伝いを頼むのは難しいと思っています。 |  |
| 3 | 私は家族を助けることは得意であるし、乗り越える時には彼とどのようにすべきかを熟知している。 |  |
| 9 | 私は家族を助け時に、何をするべきかはっきりと分かっている。 |  |
| 10 | 自分の家族の疾病や障がいに関して、より多くの情報を望みたい。 |  |
| 17 | 自分の家族をケアができるという自信が、私にはある。 |  |
| 12 | 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 | 私のことを気にかけてくれる人がいないと大変だったことと思う。 |  |
| 5 | 自分と同年代で、同じように疾病や障がいを持った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 | 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。 |  |
| 15 | 家族の疾病や障がいについて、医者が自分に話したり、説明してくれたら良いのにと思う。 |  |
| 8 | その相手が助けることを望まずないので、私は家族に関して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良いのにと思う。 |  |