"Walking or jogging" in Q2, "Climbing a tree" in Q3, and "Throwing one's arms in the air in celebration" in Q4. However, no interrelation between each character was described. Furthermore, for Q5, many participants who failed to understand the context of the cartoon responded such as "A hole in the ground" or "Hole," but not "Pitfall." Similarly, for Q6, they provided responses such as "He is just walking" or "He is walking through the park (without any change)," even though they described a hole in Q5.

For Q7 (Figure 4b), the most common incorrect response was "I really don't understand it" or "Hmmm...I can't make any sense of this" (3.8% of incorrect responses in CDR 0, $n = 1$; 50.0% in CDR 0.5, $n = 1$; 55.7% in CDR 1, $n = 15$; 71.4% in CDR 2, $n = 10$). Many participants in CDR 2 said "I don't understand" without thinking, whereas the participants in CDR 1 provided several possibilities as the response.

Discussion

Findings of the present investigation

In the present study, the total score of the Pitfall task in mild (CDR1) to moderate (CDR2) AD participants was significantly lower than that in healthy older adults (CDR 0). Even when the MMSE score was further added to the covariate of ANCOVA, the total task score also decreased significantly with progression of AD. Furthermore, the Pitfall task showed mild correlation with the MMSE score, indicating that the Pitfall task partly reflects comprehensive cognitive function, but mostly reflects a kind of social cognitive function.

As previously noted, there is considerable agreement that communicative disability is a prominent symptom of AD, and studies have focused on various aspects of linguistic skill disorders (Carlomagno *et al.*, 2005; Forbes-McKay and Venneri, 2005). These studies often used the picture description task, such as the Cookie Theft Picture, which was originally developed for aphasia (Goodglass and Kaplan, 1983) to assess linguistic changes in verbal expression or subtle spontaneous language decline, but not to assess intentions/beliefs of characters in the cartoon (ToM) (Bschor *et al.*, 2001; Carlomagno *et al.*, 2005; Cuetos *et al.*, 2007).

Some studies showed that AD patients succeeded in first-order false–belief tasks, but failed in second-order false–belief tasks, and suggested that any deficits on ToM testing are secondary to impairment in other functions such as memory and/or verbal skills (Gregory *et al.*, 2002; Zaitchik *et al.*, 2004; Fernandez-Duque *et al.*, 2009). However, it is possible that the second-order false–belief task was too difficult, because the sentences used are complex and require memory and other cognitive functions. Our current task was designed to minimize these factors.

In the course of developing the Pitfall task, we tried several single-frame cartoons including other people's intentions/beliefs, and determined the task and clue questions based on a difficulty level where most healthy older adults perform contextual understanding/ToM without clue questions. The task is brief, easy to administer in the outpatient clinic, and less stressful for patients than conventional cognitive tests.

The Pitfall task is associated with seven serial questions, which gradually provide clues to understand the whole context: the Q1 is not a clue question, Q2 and Q3 are clues about the character's objective context, Q4–Q6 are clues to understand the whole context of the cartoon, and Q7 is a direct question of the character's intention.

In this study, most of the participants in CDR 0 understood the context at Q1 without clue questions. In contrast, about half of the participants in CDR 0.5 understood with helpful clues (Q4–Q6), suggesting that social skills such as contextual understanding/ToM start to become impaired from the aMCI stage. Many of the participants in CDR 0.5 understood the context at Q4–Q6, suggesting that the clues for aMCI patients may promote contextual understanding/ToM, including understanding of other people's intentions. Although, about one-fourth of the participants in CDR 1 understood the context at Q1 or Q2, none of the remaining participants understood at Q3–Q7. Furthermore, no participants in CDR 2 understood the context of the cartoon. Thus, contextual understanding/ToM is mildly impaired in early AD patients and impaired more severely with progression of AD.

There is evidence that visuospatial attention declines in early AD (Parasuraman *et al.*, 2000). A study by Rösler *et al.* (2005) suggested reduced efficiency of visual search in AD, which is caused by reduced control of attentional zoom and disengagement of attention from peripheral targets. Thus, some of the incorrect responses in the present study may have been related to deficits of visual attention or simultanagnosia, which is associated with parieto-occipital damage (Huberle and Karnath, 2010).

Using the findings of the Pitfall task for AD care

The communication problems between caregivers and patients trigger BPSD (Potkins *et al.*, 2003; Gitlin *et al.*, 2007). Moreover, family education,

which attenuated communication problems, was effective in reducing BPSD (Ripich *et al.*, 1998; Gitlin *et al.*, 2007).

According to the current results of the Pitfall task, we recommend promising strategies for caregivers to provide appropriate explanations or helpful clues for AD patients. The majority of aMCI patients had difficulty in understanding context without explanation. If the patients understand the context with clue questions, a simple explanation may be effective. In the current study, some participants in CDR 0 and CDR 0.5, who did not understand the context, quickly understood after the examiner's explanation and said things such as "He falls into a hole..... Oh! I see!" or "This is a pitfall! The other child is playing a funny trick on him!". However, in CDR 1 and CDR 2, only a few participants understood the context, even after the examiner's explanation. If mild (CDR1) and moderate (CDR 2) AD patients fail to understand the context with clue questions, detailed explanations or clues could cause confusion. The current study indicated that social reasoning skills were considerably poorer in patients with mild AD and further deteriorated in patients with moderate AD. These findings suggest that caregivers should provide simple explanations for patients in the milder stages of AD, and factual information with minimal explanation for patients in the moderate stages of AD.

In the present study, we allowed patients' families to observe the patients' responses during the task. The family caregivers showed various responses; some expressed feelings of shock and disappointment on seeing the results or reprehended the patients' mistakes, while other caregivers nodded encouragingly with a warm smile even if the patient responded with incorrect responses or did not understand. We observed some communication problems between caregivers and patients through caregivers' responses to patient's mistakes during the Pitfall task. The Pitfall task could provide helpful clues to assist caregivers for better understanding of communication problems in AD patients.

As limitations, the Pitfall task assessed only one narrow area of social cognition. Vasse *et al.* (2010) suggest in their systematic review that there is insufficient evidence of communication strategies for people with dementia. Effective use of the Pitfall task in successful care should be demonstrated in our future study.

Conflict of interest

None.

Description of authors' roles

T. Yamaguchi designed the study, collected the data, carried out the statistical analysis, and wrote the paper. Y. Maki collected the data and wrote the paper. H. Yamaguchi supervised the design of study, collected the data, and wrote the paper.

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Original Research Article

Yamaguchi Facial Expression-Making Task in Alzheimer's Disease: A Novel and Enjoyable Make-a-Face Game

Tomoharu Yamaguchi[a, b] Yohko Maki[a, c] Haruyasu Yamaguchi[a]

[a]Gunma University Graduate School of Health Sciences, [b]Department of Rehabilitation, Gunma University of Health and Welfare, and [c]Geriatrics Research Institute and Hospital, Maebashi, Japan

Key Words
Dementia · Facial expression · Dementia care · Caregivers · Emotional reactions to dementia · Cognitive tests · Behavioral/psychiatric symptoms of dementia

Abstract
Background: To assess the ability to make emotional facial expressions, we newly developed the Yamaguchi facial expression-making task (Y-FEMT). ***Method:*** We recruited 20 normal controls and 61 outpatients: 10 with amnestic mild cognitive impairment (aMCI), 34 with mild Alzheimer's disease (AD), and 17 with moderate AD. In the Y-FEMT, smile and anger expressions were made by arranging face parts. We examined the relationship between each Y-FEMT score and the Mini-Mental State Examination (MMSE) score or overlapping figure identification test (Fig-test). ***Results:*** The Total score (0–20) was nearly achieved in controls (18.9 ± 1.4) and declined with AD progression (aMCI 17.2 ± 2.4, mild AD 15.7 ± 2.6, moderate AD 12.3 ± 2.7). The Anger score (0–10) was significantly lower than the Smile score (0–10) in mild and moderate AD ($p = 0.007$ and $p = 0.006$, respectively). The Structure score (0–6 each) correlated well with both the MMSE score ($r = 0.44$, $p < 0.001$) and Fig-test ($r = 0.45$, $p < 0.001$), whereas the Expression score (0–4 each) correlated only with the MMSE score ($r = 0.33$, $p = 0.01$). The Subjective scores (0–4), evaluated by 10 therapists, highly correlated with the Total score. Additionally, the Y-FEMT promoted laughter and a convivial atmosphere. ***Conclusion:*** The Y-FEMT pleasantly assessed the ability to make emotional facial expressions without special equipment. Furthermore, the Y-FEMT may provide helpful clues for caregivers to achieve good communication with AD patients for better care.

Tomoharu Yamaguchi
3-39-15 Showa-machi
Maebashi, 371-8514 (Japan)
Tel. +81 27 220 8946
E-Mail yamaguchi@shoken-gakuen.ac.jp

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Introduction

In the care of Alzheimer's disease (AD) patients, deficits in the recognition of emotional facial expressions may cause problems between AD patients and their caregivers because emotion perception deficits, rather than general cognition, have been linked to interpersonal difficulties [1, 2]. Furthermore, problems in emotional perception, but not cognitive function or mood, predict quality of life [3]. Patients with AD have deficits in recognizing facial emotion, which may be independent of their impairment in recognizing non-emotional features of faces [4]. Discriminating facial identities has been shown to be impaired in AD patients [5]. Recognition of emotional facial expressions can be impaired in mild cognitive impairment (MCI) prior to the diagnosis of AD [4, 6]. In addition, the ability to recognize emotional facial expressions is impaired with the progression of AD [7], but recognition and reaction to emotional facial stimuli are partially preserved in the advanced stages of dementia, in which the most sensitively identified emotion is happiness [8].

As described above, there are many reports on disturbed recognition of emotional facial expressions in MCI and AD. However, no study has investigated the ability of AD patients to make facial expressions. Furthermore, it is not easy to detect the disturbed recognition of emotional facial expression in a clinical setting because special techniques or instruments, such as a computer with morphing technology, are needed for detection.

We thus developed a new cognitive task, the Yamaguchi facial expression-making task (Y-FEMT), to assess the ability of patients to make emotional facial expressions by arranging pieces of face parts. The origin of the Y-FEMT is the traditional Japanese make-a-face game 'Fuku-warai', meaning 'Lucky Laugh'. The aim of this game is to put face parts (e.g. eyebrows, eyes, nose and mouth) on a face outline while the player's eyes are covered with a hand towel. Then, all participants enjoy laughing at the funniness of these facial expressions. Fuku-warai is traditionally played during the New Year's holidays. The Y-FEMT consisted of two tasks to make up 'Smile' and 'Anger' faces without a blindfold. We describe the development of the Y-FEMT, how we used to investigate patients' ability to make emotional facial expression, and its association with other cognitive tests. After defining the objective standard of the Y-FEMT, we added a subjective scoring method of the Y-FEMT for easy use in clinical practice.

Methods

Participants

Normal controls (NC; n = 20), aged 61 to 80 years, were recruited from community dwellers who participated in the 'Prevention of mental decline' project in Takasaki City, Gunma, Japan. These participants were judged normal based on the results of cognitive tests and medical interviews by clinicians specializing in dementia. We recruited 61 participants who were diagnosed as having amnestic MCI (aMCI) or AD at the outpatient clinic of the Geriatrics Research Institute and Hospital in Maebashi, Gunma, Japan.

The AD patients were diagnosed based on the criteria of the National Institute of Neurological and Communicative Disorders and Stroke and Alzheimer's Disorders and Related Disorders Association (NINCDS-ADRDA) [9]. Similarly, the aMCI patients were diagnosed based on a previous study [10]. In the present study, 61 participants were classified according to the Clinical Dementia Rating (CDR) by an experienced neurologist. The discriminant criteria of mild and moderate AD were CDR 1 (n = 34) and CDR 2 (n = 17), respectively.

None of the participants demonstrated other psychiatric disorders or had problems with alcoholism, motor deficits such as paralysis, major heart disease or neurological or psychi-

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Table 1. Demographics and clinical characteristics

	All (n = 81)	NC (n = 20)	aMCI (n = 10)	Mild AD (n = 34)	Moderate AD (n = 17)
Male/female	27/54	7/13	6/4	12/22	2/15
Age, years	77.5 ± 6.8	72.3 ± 4.9	74.3 ± 7.0	79.6 ± 6.6	81.3 ± 4.4
Education, years	10.3 ± 2.7	12.5 ± 2.0	10.6 ± 4.0	9.5 ± 2.1	9.2 ± 2.4
MMSE score	21.6 ± 6.5	28.8 ± 1.4	26.5 ± 2.6	20.2 ± 3.2	12.9 ± 4.2
Y-FEMT score (objective)					
Total	16.0 ± 3.2	18.9 ± 1.4	17.2 ± 2.4	15.7 ± 2.6	12.3 ± 2.7
Smile	8.4 ± 1.6 ***	9.6 ± 0.9 n.s.	9.0 ± 1.2 n.s.	8.4 ± 1.6 **	6.9 ± 1.2 **
Anger	7.5 ± 2.1 ***	9.3 ± 1.1 n.s.	8.2 ± 1.6 n.s.	7.4 ± 1.7 **	5.4 ± 2.0 **
Structure	10.4 ± 1.8	11.6 ± 0.8	11.0 ± 1.1	10.6 ± 1.3	8.5 ± 2.3
Expression	5.5 ± 2.0	7.3 ± 0.9	6.2 ± 1.9	5.1 ± 1.8	3.8 ± 1.3
Subjective score[#]	2.8 ± 1.1	3.5 ± 0.6	3.3 ± 0.8	2.8 ± 1.0	1.8 ± 1.1

Data are presented as mean ± standard deviation. n.s. = Not significant.
** $p < 0.01$, *** $p < 0.001$: comparison between the Smile and Anger scores by a paired t test. [#] Subjective score was assessed by 10 evaluators.

atric disorders other than the primary diagnosis of AD or aMCI. Demographic data and clinical characteristics are shown in table 1. All participants reported normal or corrected-to-normal vision, and they were naive with regard to the purpose of the experiment. The Ethics Board of Gunma University School of Health Sciences approved all procedures (No. 21–47), and signed informed consent was obtained.

All participants underwent the Mini-Mental State Examination (MMSE) [11] and overlapping figure identification test (Fig-test), which consists of line-drawn figures of six objects: hat, eyeglasses, vase, apple, tulip and hammer. The participants were asked to identify each figure, and the score range was 0–6.

Procedure

The Y-FEMT contains two tasks. Participants were asked to arrange parts of a face puzzle (fig. 1a) to make two kinds of emotional facial expressions, 'Smile' and 'Anger' (fig. 1b, c). The face puzzle used in this study was made of thick, stiff paper and consisted of one outline plate of a face with hair (25 cm long and 19 cm width) and six facial parts: two eyebrows (or mustache; 5.5 cm long and 2 cm width), two eyes (6.5 cm long and 3.5 cm width), one nose (4.5 cm long and 4 cm width) and one mouth (10 cm long and 3.5 cm width) (fig. 1a).

Protocol

The protocol was as follows: (1) The participant sits at their desk. The face outline plate (fig. 1a) is placed in the center of the desk. (2) The Y-FEMT starts with the Smile task (fig. 1b) followed by the Anger task (fig. 1c). (3) For the Smile task, the examiner hands six randomly-oriented parts of a human face (fig. 1a) to the participant, and gives the simple instruction: 'You must use all of these parts and arrange the pieces to make a smiling face'. The instruction can be repeated, if required. (4) Then, the participant arranges the face parts on the face outline plate to make a smiling face. (5) The examiner records the completed task by taking a photograph (fig. 1d–f). If the participant cannot complete the task within 2 min, the uncompleted task is scored. (6) Avoid giving advice or pointing out any error until the end of the next task. (7) For the 'Anger' task, the examiner hands the participants six face

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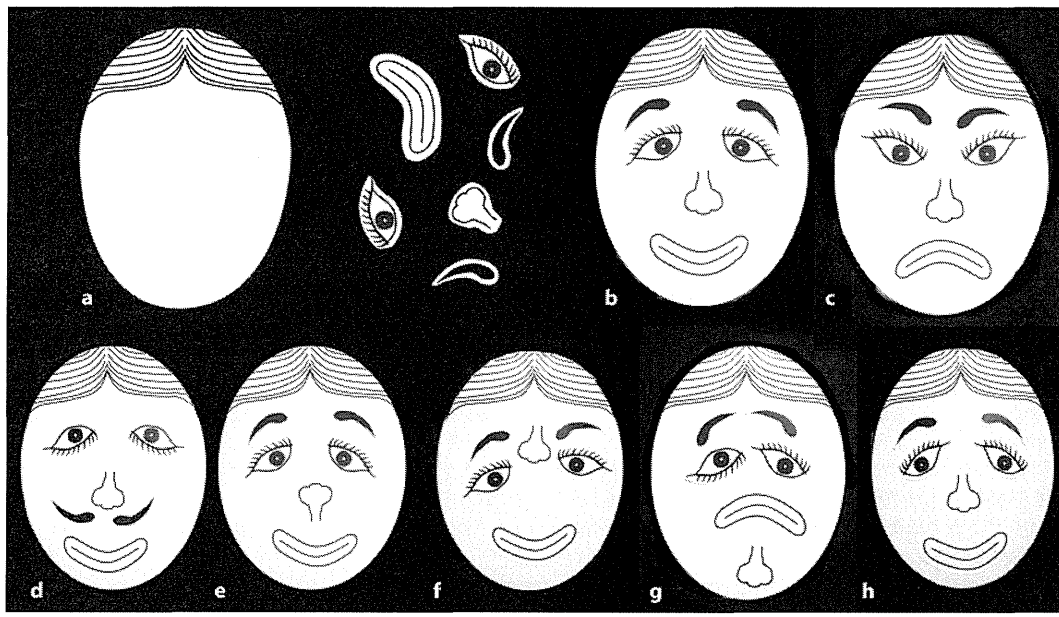

Fig. 1. Parts of the Y-FEMT, exemplary results and error patterns. **a** The Y-FEMT consists of one outline plate and six simple parts of the human face. Exemplary results of the Smile task (**b**; Smile score was 10/10) and Anger task (**c**; Anger score was 10/10) in healthy elderly people. **d–f** Examples of the Smile task in AD patients. The score was decreased by 1 point for incorrect orientation of the eyes, but adopting the eyebrows as a moustache was not considered a mistake (**d**; Smile score was 9/10). Orientation of the nose is upside-down (**e**; Smile score was 9/10). Placement of the nose and symmetric property are different and expression score was 3 (**f**; Smile score was 7/10). **g**, **h** Examples of the Anger task in mild-to-moderate AD patients. Only the position of the eyebrows and eyes are correct, each gaining 1 point (**g**; Anger score was 2/10), and the fundamental structure of the face was good, except that the orientation of the eyes is left-right reversed, but the facial expression is different (**h**; Anger score was 5/10).

parts and gives a similar instruction: 'You must use all of these parts and arrange the pieces to look like an angry face'. (8) The participant arranges the six parts on the face outline to make an angry face. (9) The examiner records the completed task by taking a photograph (fig. 1g, h).

There is the option to look at the photos and laugh together after finishing both tasks.

Guideline for Objective Scoring (table 2)

Structure Score

Assessment of the fundamental structure of the face (0–12 points; 0–6 points each for Smile and Anger structures):

- Eyebrows are judged for placement in the uppermost part of the face and above the eyes or not (1 point). If participant perceived the eyebrows as a mustache, judge whether they are placed between the mouth and nose, and placed on the lower face (1 point). Point allocation is 0–1.
- Eyes are judged for placement and orientation. The criteria for placement of eyes is whether the pupil of the left eye is in the upper left quarter of the face and the pupil of the right eye is in the upper right quarter of the face (1 point). Orientation of the eyes is assessed for left-right reversal or upside-down (1 point). Therefore, point allocation for the eyes is 0–2.

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Table 2. Instructions for scoring

	Sum	Smile task	Anger task
Objective scoring			
Structure score for each Smile and Anger task	0–12		
Eyebrows or mustache (uppermost part of face or lie between nose and mouth)		0–1	0–1
Placement of eyes (pupil is in the upper left or right quarter of face)		0–1	0–1
Orientation of eyes (no left-right reversal or upside-down placement)		0–1	0–1
Placement and orientation of nose (around the center and under eyes)		0–1	0–1
Placement and orientation of mouth (bottommost part of face)		0–1	0–1
Symmetric property (bilaterally symmetric placement)		0–1	0–1
Expression score for Smile task/Anger task	0–8		
Outer corners of eyes slant downward/upward (each eye 0–1)		0–2	0–2
Outer corners of mouth slant upward/downward		0 or 2	0 or 2
Total score (sum of Smile score and Anger score)	0–20		
Smile score and Anger score are the sum of each structure score and expression score		0–10	0–10
Subjective scoring			
Subjective score for each Smile and Anger task	0–4		
Subjective evaluations: quite good = 2, approximate = 1, different = 0		0–2	0–2

- Appropriate placement of the nose is within one-half of the distance from the center of the face to the outline of the face and located between eyes and mouth. When both placement and orientation are appropriate, the score for the nose is 1 point.
- Appropriate placement of the mouth is as the bottommost of the face parts. Appropriate orientation of the mouth is with the length in the horizontal direction and the slant of the mouth within 45 degrees, regardless of whether it is upside-down. When both placement and orientation are appropriate, the score for the mouth is 1 point.
- Symmetric property (1 point) is given for bilaterally symmetric placement of the face parts.
- The 'Structure' score (0–12 points) is the sum of both the Smile and Anger structures (0–6 points each).

Expression Score

Assessment of facial expression (0–8 points; 0–4 points each for Smile and Anger expressions):

- For the Smile task, the outer corners of each eye must slant downward (each eye 1 point) and the outer corners of the mouth must slant upward (2 points).
- For the Anger task, the outer corners of each eye must slant upward (each eye 1 point) and the outer corners of the mouth must slant downward (2 points). These directions are the opposite of those in the Smile task. Eyebrows (or mustache) and nose are exempt from directional judgment. However, if there is an error in the placement of the eyes or mouth, it is not pointed out.

Smile Score and Anger Score

The Smile and Anger scores are the summations of the Structure score and the Expression score for each task. Each point allocation is 0–10.

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Total Score

The Total score is the sum of the Smile and Anger scores, which are equal to the sums of the Structure scores and the Expression scores. Point allocation is 0–20.

Guideline for Subjective Scoring (Point Allocation 0–2 for Each Task)

If an evaluator thinks each facial expression is quite appropriate, the score is 2, and if it is approximately appropriate or totally different, the score is 1 or 0, respectively. In this study, the facial expressions in each task were assessed by 10 evaluators, who were experienced occupational therapists.

Data Analyses

We scored the pictures created by all participants. To investigate group differences of objective Y-FEMT scores, we carried out analyses of covariance (ANCOVA) with covariates of age and educational years. Post hoc analysis for each group was conducted with Bonferroni correction in all 81 participants. We examined the relationship between each objective Y-FEMT score and MMSE or Fig-test scores by Pearson's product-moment correlation coefficient in the 61 patients. The influence of the order of tasks (c.f. protocol) was analyzed in the 20 NC participants. Test-retest reliability (test-retest interval 127.4 ± 51.4 days) was examined in 22 mild-to-moderate AD patients (age 80.0 ± 7.4 years, education 9.5 ± 1.9 years, MMSE score 17.1 ± 5.4; 13 mild AD and 9 moderate AD patients). Furthermore, we examined the relationship between the objective Y-FEMT score and the Subjective score assessed by 10 experienced therapists, and investigated inter-rater reliability by intraclass correlation coefficients (ICC) and correlation with the objective Y-FEMT score for clinical utility. All statistical analyses were performed with the Japanese version of SPSS 19.0 for Windows (IBM Com.). Results are reported at a significance level of $p < 0.05$.

Results

Y-FEMT in Normal Controls

Demographic data and the results of the Y-FEMT in NC (n = 20) are shown in table 1. In NC, the total Y-FEMT score was nearly achieved, although some participants showed a decreased Anger score. To analyze the influence of the order of the tasks, NC were randomly divided into two groups: 'Smile-Anger' group (n = 8, age 72.8 ± 5.7 years, education 12.1 ± 2.2 years, MMSE score 28.5 ± 1.2) and 'Anger-Smile' group (n = 12, age 72.0 ± 4.5 years, education 12.8 ± 1.9 years, MMSE score 29.0 ± 1.5). The task order did not influence the scores ($p = 0.578$, Student's t test; online suppl. table 1; for all online suppl. material, see www.karger.com/doi/10.1159/000339425).

Making Emotional Facial Expressions and Relationship with Disease Progression

All 81 participants accomplished the two tasks within the 2-min time limit. Results and representative faces made during the tasks are presented in table 1 and figure 1, respectively. In all participants, the Total score decreased with the progression of AD, as demonstrated by ANCOVA with covariates of age and educational years ($F(5,75) = 17.08$, $p < 0.001$). The results of the post hoc analysis with Bonferroni correction indicated a significant difference only between mild and moderate AD ($p < 0.001$). Some strange and funny faces were created by AD patients, as shown in figure 1d–h. Smile, Anger and Structure scores were significantly different between mild and moderate AD patients ($p < 0.01$, $p < 0.01$ and $p < 0.001$, respectively), but not between NC and aMCI patients, or between aMCI and mild AD patients. The Expression score was significantly different between NC and

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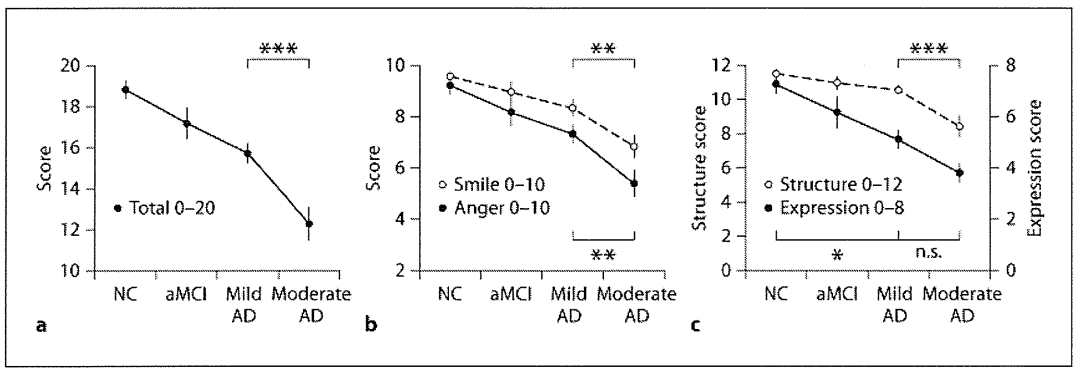

Fig. 2. Y-FEMT scores in four groups. Numbers on the graph indicate mean ± SE. Point allocation for the Total score is 0–20 (**a**), for the Smile score and Anger score it is 0–10 (**b**), for the Structure score 0–12 and for the Expression score it is 0–8 (**c**). All scores decreased with the progression of AD. There was a significant difference between mild and moderate AD except for the Expression score. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; n.s. = Not significant. ANCOVA with covariates of age and educational years.

aMCI patients ($p = 0.01$), but not between mild AD and moderate AD patients ($p = 0.069$). Thus, objective Y-FEMT scores decreased with the progression of AD especially in moderate AD patients.

Smile Score versus Anger score, and Structure Score versus Expression Score

The comparison between the Smile score and Anger score for all participants demonstrated that the Smile score was significantly higher than the Anger score ($p < 0.001$, paired t test; table 1). In the analysis of each group, the Smile score and Anger score were not significantly different in the NC or aMCI groups ($p = 0.286$, $n = 20$ and $p = 0.137$, $n = 10$, respectively), while the Smile score was significantly higher than the Anger score in both the mild AD and moderate AD groups by paired t test ($p = 0.007$, $n = 34$ and $p = 0.006$, $n = 17$, respectively; table 1). Thus, the AD participants achieved a higher score for the Smile task than for the Anger task (fig. 2b).

The Structure score and Expression score also declined with the progression of AD (table 1; fig. 2c). In the four groups, both Expression and Structure scores showed significant differences ($F(5,75) = 11.08$, $p < 0.001$ and $F(5,75) = 10.27$, $p < 0.001$, respectively). Post hoc analysis with Bonferroni correction indicated that the Expression score significantly decreased between NC and mild AD ($p = 0.01$), and that the Structure score significantly decreased between mild AD and moderate AD. Thus, the Expression score declined earlier than the Structure score.

Relationship between Expression-Making Tasks and Cognitive Tests

Next, we examined the relationship between Y-FEMT scores and two cognitive tests, the MMSE and Fig-test, in participants other than NC ($n = 61$) by Pearson's product-moment correlation coefficient. On analysis of the correlation between Y-FEMT and MMSE scores, each Y-FEMT score was mild-to-moderately and significantly correlated with the MMSE score (Total $r = 0.463$, $p < 0.001$; Smile $r = 0.346$, $p = 0.006$; Anger $r = 0.434$, $p < 0.001$; Structure $r = 0.440$, $p < 0.001$, and Expression $r = 0.328$, $p = 0.01$; online suppl. table 2). On analysis of the correlation between Y-FEMT and Fig-test scores, Y-FEMT scores other than the Expression score were mild-to-moderately correlated with the Fig-test score (Total $r = 0.387$, $p = 0.002$; Smile $r = 0.357$, $p = 0.005$; Anger $r = 0.308$, $p = 0.016$, and Structure r =

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0.452, $p < 0.001$). Note that the Expression score was not significantly correlated with the Fig-test score ($r = 0.189$, $p = 0.145$), but was significantly correlated with the MMSE score. In contrast, the Structure score showed significant correlations with both the MMSE and Fig-test scores.

Test-Retest Reliability of the Y-FEMT

The test-retest reliability was based on the ratings of 22 mild-to-moderate AD patients. The intra-rater reliability of the Total score was sufficiently high (ICC(1.1) = 0.927, $p < 0.001$). Similarly to the analysis of correlation between the first and second tries, the Total score showed a high correlation ($r = 0.936$, $p < 0.001$, Pearson's correlation).

Subjective Score of the Y-FEMT for Clinical Practice

The inter-rater reliability of the Subjective scores ($n = 81$) by 10 evaluators was good (ICC(2,1) = 0.760, $p < 0.001$). Furthermore, the Subjective scores showed a high correlation with both the Total and Expression scores ($r = 0.789$, $p < 0.001$ and $r = 0.770$, $p < 0.001$, respectively).

Discussion

Comparison with Previous Studies

This study investigated how the ability to make emotional facial expressions changes with the progression of AD. We developed the Y-FEMT for this purpose.

In the objective scoring, the Total score of the Y-FEMT decreased with the progression of AD. This finding about the ability to make emotional facial expressions is in agreement with results from previous studies on the recognition of emotional facial expressions, which start to become impaired in MCI [6, 12] and then become more severely impaired with the progression of AD [7, 13, 14].

Comparing the Structure score and Expression score, the Structure score decreased between mild and moderate AD, whereas the Expression score started to decrease between NC and mild AD. This finding suggests that the ability to make the fundamental structure of the face is maintained in the early stages of AD. Furthermore, the Structure score was significantly and moderately correlated with the Fig-test score, whereas the Expression score did not correlate with the Fig-test score. This suggests that the ability to make the fundamental structure of the face is closely related to visual function, which is impaired in the later stages of AD.

Comparing the Smile score and Anger score, the Anger score was significantly lower than the Smile score in AD patients. This findings agree with those from previous studies on the recognition of facial expressions, in which a happy face was most easily recognized cross-culturally (both Japanese and Caucasian) [15] among both healthy people and elderly subjects with AD [7, 12, 16, 17], as well as people with severe dementia [8]. In addition, the coefficient of correlation between the MMSE and Anger scores ($r = 0.434$) tended to be higher than that between the MMSE and Smile scores ($r = 0.346$). Thus, the findings of this study suggest that the ability to make an angry face is impaired in parallel with general cognitive function, whereas the ability to make a smiling face is maintained for longer.

Utility of the Y-FEMT

Most previous studies on emotional facial expression examined the ability to recognize computer-created faces. However, the Y-FEMT assesses the ability to make the fundamental structures of the face as well as emotional facial expressions. Most participants responded

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when completing the Y-FEMT. They said 'I'm not great with games like this' but smiled happily while performing the tasks. In addition, the Y-FEMT induced laughter and a convivial atmosphere, especially when we praised the participants' results after finishing the two tasks. This is a primary characteristic of the traditional Japanese game 'Fuku-warai'. In 'Fuku-warai', the resultant facial expressions are comical and funny, because the game is played while blindfolded. When dementia patients performed the Y-FEMT without a blindfold, they also created comical faces and everyone including themselves could laugh (fig. 1d–h). However, their family caregivers showed various responses; some were shocked and disappointed on seeing the results or reprehended the patients' mistakes, while other caregivers had fun together with a warm smile even if the patients scored poorly on the tasks. We can estimate some common treatment or communication problems between caregivers and patients based on the Y-FEMT, whether caregivers accept or become angry with the patients' mistakes. Thus, the Y-FEMT is a useful tool for family education on appropriate care because emotional communication and support are very important in dementia care [8]. Problems with emotion perception or emotion comprehension, rather than deterioration of cognitive function and mood, influence the quality of life and problems of interpersonal behaviors in AD patients [1, 3]. Thus, it is better for caregivers to understand the level of social cognition of AD patients. The Y-FEMT provides helpful clues for caregivers to understand the ability of the AD patients to make emotional facial expressions.

In addition, the Y-FEMT is a convenient task for assessing the ability to make faces showing expression and fundamental structure, and is less stressful than conventional cognitive tests. It is easy to do, simple to understand the rules, takes a short time, has non-committal answers and protects patients from a feeling of 'failure'. Furthermore, the Y-FEMT does not require special instruments such as a computer or monitor, unlike other recently published methods.

In this study, the Subjective score correlated highly with the objective Y-FEMT scores, Total score and Expression score. Moreover, the inter-rater reliability of the Subjective score was sufficiently high. Thus, objective scoring can be replaced by the Subjective score in clinical practice. We hope that the Y-FEMT will provide helpful clues for caregivers to improve care and communication with AD patients, and that the task performance will be enjoyable for both the patients and their caregivers.

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Disclosure Statement

The authors have no conflict of interest to declare.

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原著論文

健康増進講座受講から世代間交流型ボランティア活動への移行を規定する要因

鄭恵元[*1*2]　鈴木 宏幸[*1]　村山 陽[*1]　長沼 亨[*1]
野中 久美子[*1]　大場 宏美[*1]　倉岡 正高[*1]　藤原 佳典[*1]
東京都健康長寿医療センター研究所（東京都老人総合研究所）
社会参加と地域保健研究チーム[*1]
中央大学大学院文学研究科（心理学）[*2]

高齢者の社会参加の促進が提案されている中で、地域で実際に活動している高齢者は少ない。社会参加への意向があるにもかかわらず、その意向が充足されず、希望する活動と活動状況とは必ずしも一致していない。世代間交流を通じた地域活動への参加も同様で、熟慮されたプログラムが必要とされる。そこで、我々は高齢者の関心が高い健康増進教室に着目した。プログラムは絵本の読み聞かせ法の習得をテーマとする「認知症予防」講座とした。一般公募の高齢者54人のうち計12回の講座修了後に26人が読み聞かせグループを結成して世代間交流の担い手となることを希望した。自己完結の健康増進教室への参加から世代間交流型ボランティアへと発展する予知因子として精神的健康度が高く、社会的活動が乏しいながらも精神的に自立度が高いことが明らかになった。

キーワード：高齢者、社会参加、世代間交流、絵本読み聞かせ、ボランティア活動

1. はじめに

急速な少子高齢化が進むなか、高齢者の保健福祉と子育て支援は二つの大きな社会問題である。

厚生労働省の平成21年簡易生命表によると、男性の平均寿命は79.59年、女性の平均寿命は86.44年である。60歳前後に定年退職を迎えた後、地域を拠点として生活する期間が25年近くあることになる。人生後半期の比重や意義が増大しているなか、老年期をいかに心豊かにするかは重大な課題であるといえる（岡本1994）。

文部省（当時）は、高齢者の生きがい対策を効果的に実施するため、1984年に「高齢者の生きがい促進総合事業」を発足させ、高齢者教室、ボランティアの養成講座、高齢者の人材活用など高齢者の社会参加を促進する事業等を始めた。

それ以降、様々な高齢者の生きがい対策が実施されているが、高齢者は社会参加、世代間交流、サポートの提供といった人々との関わりの中で生きがいを感じることが示されており（蘇ほか 2004）、生きがいをはじめ、健康づくりや社会貢献などの理由から、地域や社会への参加意識を持っていると考えられる。

例えば、世代間交流を通じたボランティア活動に着目すると、それは、自己啓発型の活動やグループ内の仲間で完結する趣味のサークル活動とは異なり、グループ外にクライアントが存在し、関係組織の増加とともに高齢者ボランティアの社会的ネットワークや社会的役割が広がる。そのため、ボランティア活動から得られる心身の効果も大きくなる可能性が指摘されている（藤原ほか 2005）。以上のことから、高齢者が社会の一員として役割を持ち続け、地域社会の世代間交流の担い手として活動することは、高齢者の生きがいの創出や健康長寿の実現に繋がるものと考えられる。

一方で、少子化や核家族化の進行、地域の繋がりの希薄化など、社会環境が変化する中で、身近な地域に相談できる相手がいないなど、子育て中の保護者が孤

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立することにより、その負担感が増大している（厚生労働白書 2010)。子育て支援へのニーズが高まるなかで、君島（2010）は、幼児や児童の保育に関して社会的ニーズが高まった背景には、祖父母と孫との関わり合い方や地域の高齢者と児童との関わり合い方の変化があると指摘している。その中で、高齢者と子どもとの交流による効果が報告されている。上村ほか（2007）によると、保育所と老人介護施設が併設された施設での世代間交流による幼児の発達への効果が示されている。また、学校での児童とシニアボランティアとの交流は、身近な他者と親密なソーシャル・サポートを持たない児童へソーシャル・サポートを提供する機会になると、安永ほか（2011）は報告している。

こういった地域での子どもと高齢者間の世代間交流活動は、高齢者の生きがいの創出や子育て支援の一助になり得るとともに、高齢者と地域の子どもとの間に新たな関係を生成し、さらに保護者との交流を広め、子ども、保護者、高齢者の三世代間の理解及び地域での信頼関係を深め、ソーシャルキャピタルを醸成することが期待される。

しかし、地域で実際に活動している高齢者は少ないのが現状である。ボランティア活動に関心のある高齢者は比較的元気な者が多く(HERZOG et al.1993)、2009年に内閣府が行なった「高齢者の地域社会への参加に関する意識調査」によると、自主的な活動に参加した高齢者は 59.2%で増加傾向を示しているが、最も力を入れて参加した活動は健康や趣味活動であり、60.3%を示している。また、若い世代との交流の機会について参加意向が 60%を超えているが、しばしば、世代間交流を行なっている人は 24.6%に留まっている。

より多くの高齢者が抵抗なく世代間交流を通じた地域活動に参加でき、世代間の理解及び世代間交流を広めていく為には、高齢者が地域活動に参加しやすい熟慮されたプログラムが必要である(杉岡・倉岡 2006)。

そこで筆者らは、高齢者の関心度が高い健康増進教室に着目した。特に、いわゆる脳トレ教室あるいは認知症予防教室として高齢者に人気の高い認知機能維持・低下予防講座を選び、そのプログラムのひとつとして「絵本読み聞かせ法習得講座(以降、読み聞かせ講座と称す)」を開催した。読み聞かせ法習得による高齢者の健康増進効果が示されており(藤原ほか 2006、2011)、講座修了後に希望者は読み聞かせボランティアとして地域で活動を継続しやすく、世代間交流にもつながりやすい実践的な講座であると考える。

本研究では、読み聞かせ講座を題材として、健康増進教室の受講者が、修了後にボランティアとして世代間交流の担い手となり得るための要件・要因を追跡調査により明らかにしたい。

2. 方法

2.1. 読み聞かせ講座の概要

読み聞かせ講座のプログラムは、2004年度より東京都老人総合研究所(現東京都健康長寿医療センター研究所)が開発・展開してきた、シニアボランティアが絵本の読み聞かせ活動を通じて児童と世代間交流を行う介入研究「(通称)REPRINTS」（藤原 2008)を基盤として応用し作成したもので、REPRINTS 専属の読み聞かせ講師と研究所のスタッフで運営した。

同講座は全12回（週1回)、1回につき2時間程度実施された。講座のカリキュラムは、体力づくり、絵本の熟読、選書、読み聞かせ方法の習得、受講者間での個別発表や幼稚園児や保育園児へのお話会を想定した小グループによる読み聞かせ発表会で構成されている。同講座修了後、絵本の読み聞かせボランティアとしての実践を希望する修了者には、ボランティアグループ（以降、読み聞かせグループと称す)」の結成や自主活動をサポートすることを伝え、地域での読み聞かせボランティアとしての活動を勧奨した。

2.2. 調査対象者

筆者らはA区（2010年8月～2011年3月）とB区（2010年12月～2011年8月）の都内2地区で読み聞かせ講座を開催した。対象者は講座を修了した地域高齢者 54名（男性5名・女性49名、平均年齢 73.8歳±5.7歳）であった。

2.3. 調査方法

講座開始前に基本属性や生活機能・社会的・心理的変数に関する自記式アンケート調査を行った。自記が困難な場合には面接聴取法で聞き取りを行った。

認知機能検査は、調査員により個別に行われた。

2.4. 調査項目

基本属性に関する内容は、年齢、性別、教育歴であった。

生活機能に関しては、日常生活動作能力指標（Activities of Daily Living、以下ADL）10項目と、

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老研式活動能力指標の下位尺度である「手段的自立」の5項目を用いた（KOYANO et al. 1991）。ADLは機能的状態を評価するために移動、食事、入浴、着替え、排泄に関する5項目の自立度を尋ね、いずれも「介助なしでできる」、「介助があればできる」、「介助を要する」の3段階で評価した。聴力、視力についてそれぞれ「見える」から「見えない」、「聞こえる」から「聞こえない」まで4件法で尋ねた。なお、補聴器と眼鏡の使用状況も質問した。

社会的特性としては、まず外出頻度について「毎日2回以上」、「毎日1回」、「2、3日に1回程度」、「1週間に1回」、「ほとんど外出しない」の5件法で質問した（藤田ほか 2004）。社会的ネットワークについては、家族や親せき、友人や近所の人たちと平均どのくらいの頻度で会ったり電話をしたりしているかを「週に6、7回（ほぼ毎日）」、「週に4、5回」、「週に2、3回」、「週に1回くらい」、「月に2、3回」、「月に1回くらい」、「月に1回より少ない」、「まったくない」の8件法で質問した。なお、老研式活動能力指標の下位尺度「社会的役割」の4項目を用いた（KOYANO et al. 1991）。

知的活動の特性としては、新聞を読む、雑誌を読む、本を読む、テレビを見る、ラジオを聞く、囲碁・将棋・麻雀・パズルなどのゲームをする、美術館・博物館・音楽会・演劇・映画等に行くなどの知的活動に関する7項目を、「ほぼ毎日」、「週に数回」、「月に数回」、「年に数回」、「年に1回以下」、「まったくしない」の6件法で質問した（WILSON et al. 2002）。なお老研式活動能力指標の下位尺度である「知的能動性」の4項目も尋ねた（KOYANO et al. 1991）。

精神的健康に関する指標として、WHO-5 精神的健康状態（以下、WHO-5）（岩佐ほか 2007）、抑うつ尺度 15 項目版(Geriatric depression scale、 以下 GDS-15)（YESAVAGE 1988）、精神的自立尺度（鈴木ほか 2003）、主観的健康感（花里・芳賀 2010）を用いた。WHO-5 は、WHO が開発した精神的健康状態(Quality of Life、以下 QOL)を測定する尺度であり、5つの質問項目から構成されている。得点（素点）の範囲は0~25点で、0点はQOLが最も不良であることを示しており、25点はQOLが最も良好であることを示している。GDS-15は15項目の質問に対し、それぞれ「はい」と「いいえ」で回答してもらい、15点満点で高得点ほど抑うつ度が強いことを示している。精神的自立尺度は、目的志向性に関する質問4項目と、自己責任性に関する質問4項目から構成されており、「そう思う」、「どちらかというとそう思う」、「どちらかというとそう思わない」、「そう思わない」の4件法で回答する。それぞれ4点から1点とし、点数が高いほど精神的自立度が高いことを表す。主観的健康感は「非常に健康だと思う」、「まあ健康な方だと思う」、「あまり健康ではない」、「健康ではない」の選択肢にそれぞれ4点から1点を配点し、点数が高いほど健康感が高いことを表した。

認知機能検査は、簡易認知機能検査であるミニメンタルステート検査（Mini-Mental State Examination、以下、MMSE）（FOLSTEIN et al.1975）、改訂長谷川式簡易知能評価スケール（以下、HDS-R）（加藤ほか 1991）、日本版 Montreal Cognitive Assessment（以下、MoCA-J）（鈴木ほか 2010）を合わせて実施した。

2.5. 倫理面への配慮

本研究の遂行にあたり、東京都健康長寿医療センター研究所の倫理委員会の承認を得ている。

講座参加者に対して調査の目的、方法、匿名性が確保されることなどについて説明を行い、同意を得たうえで調査を行った。

3. 研究結果

ベースライン調査参加者は66名であったが、65歳未満の4名、本人や家族の体調不良・介護による講座辞退者3名、その他の理由による辞退者5人を除いた54名を分析対象者とした。54名のうち、読み聞かせグループ活動に参加意思を表明し、定例会などグループ活動に継続的に参加する人を読み聞かせグループ参加群（26名）と、不参加の意思表明をし、活動に参加しなかった人を読み聞かせグループ不参加群（28名）とした。

読み聞かせグループ参加群と不参加群を比較すると参加群26名の内訳は男性3名、女性23名、平均年齢74.5歳±6.6歳であり、不参加群28名の内訳は男性2名、女性26名、平均年齢73.2±4.6歳であった。講座開始前の両群の基本属性および生活機能、社会的特性、知的活動の特性、精神的健康の指標の結果を表1に示した。

両群間の基本属性の違いをカイ二乗検定によって評価した結果、地域や性別、年齢による違いは見られな

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表1 講座開始前調査における読み聞かせグループ参加群と不参加群の基本属性および各評価指標の比較

		読み聞かせグループ参加群 N=26	読み聞かせグループ不参加群 N=28	p値	
地域	［人］A区 / B区	10 / 16	10 / 18	0.529	
性別	［人］男性 /女性	3 / 23	2 / 26	0.464	
年齢群	［人］65歳～74歳 /75歳以降	16 / 10	19 / 9	0.420	
年齢	［歳］：65～88	74.5 ± 6.6	73.2 ± 4.6	0.409	
出席率[注1]	［%］：0～100	96.5 ± 4.8	89.0 ± 10.6	0.002	**
教育年数	［年］：9～18	12.7 ± 2.4	12.8 ± 2.1	0.975	
MMSE[a]	［点］：0～30	26.9 ± 2.3	26.9 ± 1.5	0.954	
MoCA-J[b]	［点］：0～30	24.7 ± 4.0	24.6 ± 2.9	0.867	
HDS-R[c]	［点］：0～30	24.4 ± 3.6	24.5 ± 2.6	0.895	
外出頻度	［点］：1～5	4.2 ± 0.8	4.3 ± 0.8	0.926	
家族との交流頻度	［点］：0～7	4.4 ± 2.0	4.6 ± 2.2	0.699	
友達との交流頻度	［点］：0～7	4.7 ± 1.6	5.0 ± 1.3	0.492	
知的活動頻度	［点］：0～35	22.4 ± 5.3	22.0 ± 4.7	0.759	
老研式活動能力指標総得点	［点］：0～13	11.8 ± 1.3	11.6 ± 1.8	0.704	
手段的自立得点	［点］：0～5	5.0 ± 0.2	5.0 ± 0.0	0.304	
知的能動性得点	［点］：0～4	3.8 ± 0.5	3.7 ± 0.7	0.320	
社会的役割得点	［点］：0～4	3.0 ± 1.0	3.0 ± 1.4	0.915	
WHO-5[d]得点	［点］：0～25	19.3 ± 4.1	17.2 ± 4.4	0.075	†
精神的自立度得点	［点］：0～32	28.2 ± 3.4	26.3 ± 3.3	0.038	*
主観的健康感得点	［点］：0～4	3.1 ± 0.7	3.0 ± 0.6	0.665	
GDS-15[e]得点	［点］：0～15	3.1 ± 2.4	4.6 ± 2.8	0.040	*
ADL[f]得点	［点］：0～28	27.6 ± 0.6	27.5 ± 0.7	0.409	

**: $p<.01$, *: $p<.05$, †: $p<.10$

a:MMSE:Mini-mental state examination, b:MoCA-J:日本版Montreal Cognitive Assessment, c:HDS-R:改正長谷川式簡易知能評価スケール, d:WHO-5:WHO-5精神的健康状態, e:GDS - 15:Geriatric depression scale, f:ADL:Activities of Daily Living

注1）出席率は講座終了後調査における結果である。

注2）離散変数のp値の算出はχ^2検定により、連続変数のp値の算出はt検定により算出した。

かった。出席率は読み聞かせグループ参加群が不参加群に比べ有意に高かった（$t(52)=3.30, p=.002$）。次に、読み聞かせグループ参加群と不参加群間の諸指標における違いを t 検定により比較した。その結果、外出頻度、家族や友達との交流頻度、知的活動頻度、老研式活動能力指標には有意差は見られなかった。

一方、WHO-5 の得点は読み聞かせグループ参加群がやや高く有意な傾向を示し、精神的自立尺度においては読み聞かせグループ参加群が有意に高い結果となった（$t(52)=2.13, p=.038$）。主観的健康感には有意差は見られなかった。GDS-15 の平均得点においては読み聞かせグループ不参加群が有意に高かった（$t(52)=2.10, p=.040$）。ADL においては両群に有意な差は見られなかった。

次に、読み聞かせグループへの参加要因を分析するにあたり、各説明変数間の多重共線性を避けるため、読み聞かせグループ参加の予知因子となり得る説明変数の選定を行った。グループ参加・不参加群間で有意差が見られた心理、社会変数（表1）と高齢者の健康の総合指標であるADLと老研式活動能力指標の下位三尺度の各要因間の相関を求め、高い相関が見られる項目を除外した（表2）。その結果、ADL、老研式活動能力指標の下位尺度である社会的役割、知的能動性、WHO-5、精神的自立尺度が選定された。

さらに、老研式活動能力指標の下位尺度である「社会的役割」、「知的能動性」、WHO-5、精神的自立尺度を説明変数とし、読み聞かせグループへの参加有無を被説明変数とし、読み聞かせグループ参加・不参加の

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表2　評価項目間の相関

	ADL[a]	TMIG[b] 手段的自立	TMIG[b] 社会的役割	TMIG[b] 知的能動性	知的活動頻度	主観的健康感	WHO-5[c]	精神的自立度	GDS-15[d]
ADL	—	0.676 **	0.161	0.198	0.134	0.079	-0.016	0.263 *	-0.215 †
TMIG手段的自		—	0.232 †	0.318 **	0.176	0.018	0.076	0.355 **	-0.264 †
TMIG知的能動			0.406 **	—	0.454 **	0.092	0.337 **	0.380 **	-0.408 **
TMIG社会的役			—		0.496 **	0.261 *	0.369 **	0.386 **	-0.304 *
知的活動頻度					—	0.140	0.335 **	0.378 **	-0.200
主観的健康感						—	0.455 **	0.364 **	-0.392 **
WHO-5							—	0.44 **	-0.515 **
精神的自立度								—	-0.64
GDS-15									—

**: $p<.01$, *: $p<.05$, †: $p<.10$

a:ADL:Activities of Daily Living, b：TMIG:老研式活動能力指標, c:WHO-5:WHO-5精神的健康状態。d:GDS - 15:Geriatric depression scale

表3 読み聞かせグループ参加を予測する要因（多重ロジスティック回帰分析より）

		オッズ比	95% 信頼区間	*p*値
年齢	[歳] ：65～	1.13	0.95 — 1.34	0.17
性別		0.14	0.00 — 4.71	0.27
教育年数	[年] ：9～18	0.83	0.58 — 1.19	0.32
出席率	%	1.25 **	1.08 — 1.45	0.00
MMSE[a]	[点] ：0～30	1.32	0.85 — 2.06	0.22
老研式活動能力指標 社会的役割得点	[点] ：0～4	0.40 *	0.17 — 0.96	0.04
老研式活動能力指標 知的能動性得点	[点] ：0～4	1.57	0.35 — 7.09	0.56
WHO-5[b]得点	[点] ：0～25	1.06	0.84 — 1.35	0.61
精神的自立度得点	[点] ：0～32	1.43 *	1.04 — 1.95	0.03
ADL[c]得点	[点] ：0～28	3.19 †	0.93 — 10.98	0.07
<モデルの適合度>				
モデルX^2 (df)	28.42(10),$p<.001$			
-2 対数尤度	46.37			
Cox-Snell R2 乗	0.41			
Nagelkerke R2 乗	0.55			

**: $p<.01$, *: $p<.05$, †: $p<.10$

a:MMSE:Mini-mental state examination, b:WHO-5:WHO-5精神的健康状態。
c:ADL:Activities of Daily Living

予知因子を、多重ロジスティック回帰分析を用いて分析した（表3）。なお分析において年齢、性別、教育年数およびMMSE得点、ADL、出席率を制御変数として分析に投入した。その結果、老研式活動能力指標の社会的役割得点が低く（OR=0.40,95%CI=0.17-0.96）、精神的自立度得点が高い人(OR=1.43,95%CI=1.04-1.95)が読み聞かせグループに移行しやすいことがわかった。

4. 考察

本研究では、世代間交流型ボランティア活動への導入におけるプレプログラムとして、心身における健康増進が期待され、特に高齢者の関心が高い、いわゆる認知症予防に着目した。その中で絵本の読み聞かせ法の習得をテーマとすることにより幅広い参加が見込まれる「読み聞かせ講座」を実施した（藤原ほか 2006、2011）。地域高齢者が、最初は自己の健康増進を主目的とした活動に参加する過程で、世代間交流に魅了されボランティア活動へと移行する要因を明らかにすることを目的とし、読み聞かせ講座修了者を対象に絵本の読み聞かせボランティア活動へ移行する要因について検討した。

その結果、講座参加者は56歳から88歳と幅広く、生活機能の高い高齢者から要支援認定を受けている高齢者まで多様であったが、読み聞かせグループ参加群と不参加群において基本属性の違いは見られなかった。

出席率は、読み聞かせグループ参加群が96.5%、不参加群が89.0%で、読み聞かせグループ参加群が有意に高く、講座中において既に本講座への関心・意欲にある程度の差が見られた可能性が示唆された。

講座開始前の生活機能、社会的特性、知的活動、精神的健康の諸指標における違いを分析した結果、読み聞かせグループ参加群のほうがWHO-5の得点および精神的自立度の得点が高く、GDS-15の得点は低かった。これらの結果から読み聞かせグループ参加群のほうがより精神的健康度が高いことが示唆された。星ほか（2011）によると、高齢者の社会的健康は精神的健康の維持に寄与すると報告している。高齢者にとって、精神的健康度は社会参加活動を支える重要な基盤であると考えられる。

続いて、読み聞かせグループへの参加有無を被説明変数とし、多重ロジスティック回帰分析を用いて分析

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した。その結果、講座出席率を統制後も、老研式活動能力指標の社会的役割得点、精神的自立度得点が予知因子として抽出された。

本研究で実施された読み聞かせ講座は、座学による受動的な講座ではなく、練習や実演を含めた講座であるため、受講者が能動的に参加する必要がある。さらに発表の準備、受講者同士の共同作業など自宅学習や課外学習も要求される。絵本という媒体を通して、新たに知的好奇心が刺激されたり、共同作業における責任が要求されるなど、能動的な活動への参加が講座に出席するモチベーションを向上させ、講座修了後の読み聞かせグループ活動への参加に繋がった可能性も考えられる。

また読み聞かせグループ参加群は老研式活動能力指標の社会的役割得点が低かった。岡本ほか（2003）によると、社会参加活動への意向があるにもかかわらず、その意向が充足されていない高齢者は全体の39.6%に達していた。さらに、世代間交流を希望する者の約40%しか実践に至っていないという2009年の内閣府調査結果から、高齢者の活動希望と活動状況とは必ずしも一致せず、現時点では地域で活動をしていなくても、社会参加活動を希望する潜在的な高齢者層が存在していると考えられる。このような潜在的な活動希望者を世代間交流活動に繋げられるきっかけとなるような熟慮されたプログラムが必要であることが示唆された。

さらに予知因子として、精神的自立度得点が高い人が読み聞かせグループに参加しやすいことがわかった。精神的自立尺度は、目的志向性と自己責任性に関する項目で構成されており、新しい活動を始めるにはきちんとした目的や自分への自信や信頼など精神的な健康度も欠かせない要因であることが示唆された。

従来、女性は子育てを通じで地域に根ざし、子育てを終えたのちに、地域のボランティア活動に参画する場合が多いとされてきた。しかしながら、急速に変貌する社会の中で生き方や価値観の多様化により、多様なライフコースをたどる高齢女性が増えている。その結果、結婚や子育ての経験のない人も増えるであろう。

このような経験を持たない人たちでも、高齢期に世代間交流活動に対して抵抗なく、順応し参画するための一方策として、健康増進事業からの導入が有効である可能性が示された。今後は、読み聞かせボランティアグループ参加群の活動状況を長期追跡しそのコンプライアンスを観察するとともに、読み聞かせ以外にも料理・食育や運動・体育など高齢者の健康増進と世代間交流を包括できるような多様なプログラムの開発・検証が重要である。

5. 結語

本研究では、絵本読み聞かせ講座を修了した地域高齢者が、読み聞かせボランティアグループとして、世代間交流プログラムへと移行する要因を検討した。

その結果、読み聞かせグループへ参加した人たちは、講座受講時の交絡要因を調整した後も、社会的役割が乏しいが、精神的に自立度が高いことが明らかになった。

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SUMMARY

It has been acknowledged that the development of social activities for the elderly in communities would solve various issues in modern society. However, actual community involvement and activities for