

Original

Validity and Reliability of a Japanese Version of the Greater Cincinnati Chapter Well-Being Observation Tool for Older Adults with Dementia

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Abstract

Background & Aims: In Japan, although art therapy is practiced in older care facilities, no assessments focusing on the psychological well-being of people with dementia are being conducted. The aim of the present study was to develop a Japanese version of The Greater Cincinnati Chapter Well-Being Observation Tool.

Methods: A total of 37 people with mild to moderate dementia participated in six types of visual art therapy sessions. All of the sessions were recorded, and the total number of samples was 105. Each sample was evaluated by two of the 40 raters. Two raters evaluated the condition of the older people adults with dementia during the sessions using the Japanese version of the tool.

Results: Cronbach's α coefficient for the entire Japanese version of the tool was 0.852. When tested for intra-rater reliability, Pearson's correlation coefficients of the seven domains were between 0.900 and 0.704. When inter-rater reliability was tested, the interclass correlation coefficient of the seven domains between two raters was between 0.292 and 0.590. Factor analysis of the seven domains was conducted, and two factors were identified. These results coincided with the results of the factor analysis of the English version of the tool.

Conclusions: The Japanese version of the tool was developed, and its reliability and validity were confirmed. Further study is recommended to improve reliability.

Article Information

Key words:

art therapy,
dementia,
validity and reliability,
well-being

Publication history:

Received: November 12, 2022
Revised: February 2, 2023
Accepted: February 6, 2023

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Introduction

According to a report from the World Health Organization, more than 55 million people globally live with dementia, and there are nearly 10 million newly diagnosed dementia cases every year.¹ It is said that the number of persons with dementia doubles every 20 years and is expected to reach 78 million in 2030 and 139 million in 2050.² In Japan, measures to address dementia were compiled into the Framework for Promoting Dementia Care³ in 2019, and creating a society that respects the individual with dementia became a clear national strategic guideline. When dementia progresses, patients exhibit decreased self-motivation and reduced emotional expression, complicating communication with others.⁴ Losing memories of one's life has been reported to be akin to losing one's inner values (self-esteem) and one's identity (personhood),⁵ and as such, dementia greatly affects quality of life (QOL) and well-being.

Non-pharmacological therapies are the first line of treatment against behavioral and psychological symptoms for people with dementia.⁶ Historically, drawing and painting have been recognized as effective therapeutic processes by both psychiatric and psychological experts. Clients do not need artistic experience or skills. The overall aim of the practice is to allow clients to grow and change at their own personal level in a safe and encouraging environment through the use of art materials.⁷ Visual art therapy is defined as a "therapeutic process based on spontaneous or prompted creative

expression such as painting, drawing, sculpture, clay modeling and collage".⁸ A wide range of benefits of visual art therapy for adults with dementia have been reported, such as: reducing depressive symptoms and anxiety;^{9,10} reducing apathy;¹¹ enhancing verbalization;¹² improving cognitive function;¹³ and enhancing communication skills.^{11,12,14,15} Effects of enhancing well-being and QOL have also been reported.^{11,13,14}

There is a widely used assessment tool, The Greater Cincinnati Chapter Well-Being Observation Tool (GCCWBOT), which was developed abroad for evaluating the well-being of participants.¹⁶ The GCCWBOT is an assessment tool that was first developed by Rentz¹⁷ and later modified jointly by Kinney and Rentz.¹⁶ The assessment is performed using a total of 19 indicators in seven domains of well-being. The assessments consist of raters observing the behavior of adults with dementia who are participating in a visual art therapy session and conducting assessments at 10-minute intervals. The GCCWBOT was created based on the concept of psychological well-being proposed by Lawton (1997).¹⁸ Using a two-dimensional combination (individual and environment; subjective assessment and objective assessment), Lawton (1994)¹⁹ conceptualized the QOL of older persons by grouping the concepts into the following four sectors: 1) behavioral competence, 2) psychological well-being, 3) perceived quality of life, and 4) objective environment. Lawton strongly emphasized the significance of measuring psychological well-being in particular. The GCCWBOT evaluates seven domains (Interest, Sustained attention, Pleasure, Negative affect, Sadness, Self-esteem, and Normalcy) of adults with dementia participating in visual art therapy sessions using the psychological well-being framework proposed by Lawton. A total of 19 indicators are used in the evaluation (Pleasure and Sadness domains are evaluated using two indicators, whereas the remaining domains are evaluated with three indicators). Algar et al.²⁰ compared 11 observational assessment tools used to observe the well-being of adults with dementia during sessions such as visual art therapies and other activity-based interventions. In terms of psychological effects, it was reported that the GCCWBOT is an appropriate measure with high sensitivity. Windle et al.¹⁴ evaluated the effectiveness of a visual art program using the GCCWBOT in 125 people with mild to severe dementia. They reported that the scores for interest, attention, pleasure, self-esteem, negative affect, and sadness of people with dementia improved significantly due to the visual art program.

As described above, the GCCWBOT is an effective assessment tool for measuring well-being in visual art therapy for people with dementia. In Japan, although visual art therapy is practiced in care facilities for older persons, no assessments focusing on the psychological well-being of people with dementia are being conducted. One of the reasons is the lack of proper assessment tools. A Japanese version of the GCCWBOT will lead to the proper evaluation of the psychological effects of visual art therapy in Japan and will contribute to enhancing the quality of care for older adults with dementia. Thus, the

aim of the present study was to develop a Japanese version of the GCCWBOT and confirm its reliability and validity. In the present study, we hypothesized that the Japanese version of the GCCWBOT has equivalent reliability and validity to the original English version of the GCCWBOT.

Materials and Methods

Participants and procedures

Subjects

Three nursing care insurance facilities for older persons in Prefecture A were selected as the research collaboration facilities after their facility directors gave written consent to participate in the present study when asked by the researchers. Subject candidates were residents (≥ 65 years old) of these three facilities who were diagnosed with mild to moderate dementia according to medical reports from attending physicians [Clinical Dementia Rating (CDR) ≤ 2] and who were deemed mentally and physically able to participate in visual art therapy sessions. A total of 37 subjects who had either given consent themselves or consent was obtained from their families were chosen among the subject candidates and participated in the visual art therapy sessions. A total of six, 40-minute visual art therapy sessions were conducted once a week at each facility. The visual art therapy sessions were conducted between June and August 2019. Participation was voluntary, and subjects were not forced to participate in the visual art therapy sessions. Subjects were also allowed to withdraw their participation at any time, even in the middle of a visual art therapy session. The safety of the subjects while participating in the sessions was considered by the researchers and facility staff.

Raters

Rater candidates were undergraduate nursing students at B University (≥ 20 years old). Forty students who gave written consent were recruited as raters. Of the 40 raters, there were three men and 37 women (age 21.4 ± 1.0 years). They were all students majoring in nursing. The evaluation period was between August 1, 2020 and September 30, 2020. Nursing students were chosen as raters for this study because the staff members of older care facilities would not have sufficient time to evaluate the samples, and nursing students had studied in a gerontological nursing practicum. In this study, a self-reported measure was not conducted because it may be difficult for the subjects to accurately explain their feelings during the session.

Translation procedure

Developing the Japanese version of the GCCWBOT We translated the original English version of the GCCWBOT into The Japanese version based on an adapted Brislin's translation model for cross-cultural translation, which included translation, back-translation, comparison, linguistic adaptation, and pilot testing.²¹ Seifpanahi et al.²² reported that Brislin's classic back-translation model was more prominent than other translation procedures. After

obtaining permission from the creators, Kinney and Rentz, to translate the original English version of the GCCWBOT, the following steps were taken to create the Japanese version of the GCCWBOT.

- (1) To understand the meaning of the questions written in English in the English version of the GCCWBOT, two nursing researchers individually translated them into Japanese, and they discussed the concepts together afterwards.
- (2) (1) was reviewed by a Japanese bilingual person. The Japanese translation produced in (1) was revised by a Japanese researcher who is not a healthcare professional but lived in the United States and obtained a doctoral degree at a graduate school in the United States.
- (3) The document prepared in (2) was examined by three researchers, the two nursing researchers, along with one researcher with experience in developing assessment tools in foreign languages, for concepts and semantics of the English and Japanese versions.
- (4) Examination by a bilingual professional. The Japanese translation produced in (3) was reverse translated from Japanese to English by a native English speaker who had experience as a translator and interpreter. The translator performing the reverse translation was blinded.
- (5) Examination by the nursing researchers and the researcher with experience in developing foreign language assessment tools. The document prepared in (4) was examined and revised by the two nursing researchers and the researcher with experience in developing foreign language assessment tools. The content validity of the Japanese version of the GCCWBOT was confirmed.
- (6) Five students were recruited as raters, and a pretest was conducted while watching a video recording of three older adults with dementia participating in an art therapy session. The five students were asked for their opinion on using the Japanese version of the GCCWBOT, and a user manual for the Japanese version of the GCCWBOT was created.

Ethical considerations

The study was approved by the Gunma University Ethical Review Board for Medical Research Involving Human Subjects (approval number: HS2018-200) and was registered in the Clinical Trials Registry of the University Hospital Information Network in Japan (UMIN000036731). Informed consent was obtained

from all participants. All study processes were conducted in accordance with the Declaration of Helsinki, and due consideration was given to protecting human rights.

Measurements

Configuration and use of the Japanese version of the GCCWBOT

Similar to the original English version, the final developed Japanese version of the GCCWBOT consisted of seven domains: Interest, Sustained attention, Pleasure, Negative affect, Sadness, Self-esteem, and Normalcy. This assessment tool consisted of a total of 19 indicators, with two to three indicators explaining each of the domains (see Supporting Information 1). The Japanese version of the GCCWBOT assessed the condition of the people participating in an art therapy session every 10 minutes at 10, 20, 30, and 40 minutes using a 5-point scale: Always (4 points); Most of the time (3 points); Some of the time (2 points); Rarely (1 point); and Never (0 points). During the 10-minute observation period, the following criteria for the 5-point assessment tool were used. The mean value of the indicator in each domain was considered the score for each domain. Since four assessments were conducted within a 40-minute art therapy session, the mean of the four assessments was used in the analysis as the score indicating the condition of subjects during the art therapy session. Furthermore, since Negative affect and Sadness were reverse-scoring items, data were analyzed after correcting for reverse-scoring (see Supporting Information 2).

Producing a video recording showing older adults with dementia participating in a visual art therapy session

Visual art therapy sessions were recorded in this study because Algar et al.²⁰ suggested that videoing the sessions would add to best practice to help achieve the best assessment of well-being of people with dementia in an art session using the GCCWBOT. Sauer et al.²³ reported that they evaluated the participants of visual arts activity programs by videotapes recorded during visual arts activities, by using the GCCWBOT.

A total of six, 40-minute visual art therapy sessions were conducted once a week at each facility. The researchers and facility staff facilitated the therapy sessions. The contents of the six therapy sessions were different every time, and they consisted of six types (Table 1). When obtaining consent to participate in this study, the researchers explained to the subjects that the sessions

Table 1 Details of the art therapy sessions

Art therapy session		Details
Session 1	Oil pastel drawing	Drawing lines using oil pastels
Session 2	Making a flower vase and flower arrangements	Making a flower vase and using it to arrange flowers
Session 3	Painting hydrangeas and fruits	Painting with paint by looking at hydrangeas and fruits
Session 4	Coloring	Coloring inside the outlines of the coloring sheet
Session 5	Collage	Pasting colored paper inside the outline of the coloring sheet
Session 6	Weaving baskets	Weaving a basket by threading a string through thick paper

would be recorded and obtained consent for the recording. Footage was recorded by setting up the video camera making sure that two to three older adults with dementia fit in one frame. A total of 40 scenes were recorded on video. The total number of samples was 105 after excluding poor recordings where the conditions of the subjects were difficult to evaluate. The sample size for the present study was determined using the scoring system for the COSMIN checklist as a reference.²⁴ The following is stated in the COSMIN checklist: At least 100 samples are needed to verify reliability, and for factor analysis, the sample size should be at least five to seven times the number of items with a minimum of 100.

Method of evaluating the condition of the older adults with dementia by the raters

The raters also practiced evaluating using the Japanese version of the GCCWBOT with a training video. The raters used the Japanese version of the GCCWBOT to assess the conditions of the older adults with dementia every 10 minutes for a total of four times while watching the recorded video of the people participating in a visual art therapy session. A total of 105 samples were examined. Each sample was evaluated by two of the 40 raters. Each sample was evaluated separately by two raters. Each rater evaluated 5-6 samples assigned in advance. Of the 5-6 assigned samples, the same rater retested 2-3 samples after an interval of two weeks.

Characteristics of subjects

The basic attributes of the subjects and raters were investigated. The basic attributes of the subjects investigated in this study were sex, age, diagnosis, long-term care level, independence in daily living of older adults with dementia, and the CDR. The long-term care level was classified according to the care-need certification criteria in the long-term care insurance system in Japan. The degree of independence of older people with dementia was classified according to the criteria for determining the degree of independence in living of older people with dementia in the long-term care insurance system in Japan. The basic attributes of the raters (students) investigated in this study were sex, age, and year group.

Analysis

A total of 105 samples were examined. The calculated Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.827, confirming the validity of the sample size. Statistical analysis was conducted using SPSS ver.25 according to the following procedures. After examining the presence or absence of ceiling and floor effects with item analysis, an exploratory factor analysis was conducted to identify intrinsic potential factors among the observed variables. To determine internal consistency of the assessment tool, Cronbach's α coefficient was calculated through reliability analysis of the whole and of each of the domains. Intra-rater correlation was examined by calculating the Pearson correlation coefficients of the first and second scores assessed by the same rater. Inter-rater reliability was tested by calculat-

ing the interclass correlation coefficient (ICC) of the scores assessed by two raters separately. Furthermore, the absolute value of the difference in scores between two raters was calculated, and the percentage of the score difference being 1 or less was obtained. An exploratory factor analysis was conducted to identify intrinsic potential factors among the observed variables. The level of significance was set at 5% for all tests.

Results

Attributes of the subjects

Subjects (Table 2)

There were 12 male and 25 female subjects whose mean age was 86.9 ± 6.9 years. In terms of the types of facilities, 28 subjects resided in multifunctional long-term care small group homes, and 9 subjects resided in a group home for persons with dementia. The diagnoses were vascular dementia (45.9%), Alzheimer's disease (37.8%), Lewy body dementia (8.1%), and others (8.1%). The most common long-term care level was level 2, at 35.1%. The most common level of the degree of independence for older adults with dementia was IIB, at 32.4%. A CDR of 2, which indicates a moderate level, was the most common, at 54.1%.

Item analysis

Item analysis of the Japanese version of the GCCWBOT was conducted using the evaluation data of the 105 samples collected in the present study. Since the 19 indicators of the Japanese version of the GCCWBOT were categorized into seven domains, item analysis of seven categories was conducted using the mean value of the indicators in each domain. Since the possible maximum and minimum values for each indicator were 4 and 0, respectively, a floor effect was not observed in all items, but a ceiling effect was observed in two items, Negative affect and Sadness. However, since the purpose of the present study was to develop a Japanese version of the GCCWBOT, the analysis was continued without removing the Negative affect and Sadness categories in order to respect the configuration of seven domains and 19 indicators of the original English version of the GCCWBOT.

Reliability (Table 3)

Internal consistency

Cronbach's α coefficient for the entire 19-item Japanese version of the GCCWBOT was 0.852. The α coefficient for each domain was 0.889 for [Well-Being] and 0.846 for [Ill-Being], and Cronbach's α coefficients for the seven domains were between 0.661 and 0.894.

Intra-rater correlation

Pearson's correlation coefficients for the seven domains were calculated using the test-retest method. The correlation coefficients were as follows: 0.833 for "Pleasure", 0.861 for "Interest", 0.827 for "Self-esteem", 0.900 for "Normalcy", 0.818 for "Sustained attention", 0.895 for "Sadness", and 0.704 for "Negative affect". They all demonstrated a significant strong positive correlation (P

Table 2 Subjects' attributes

n=37

		n	%
Sex	Male	12	32.4
	Female	25	67.6
Average age		86.9 ± 6.9 y	
Facility	Multifunctional long-term care small group home	28	75.7
	Group home for persons with dementia	9	24.3
Diagnosis	Vascular dementia	17	45.9
	Alzheimer's disease	14	37.8
	Lewy body dementia	3	8.1
	Others	3	8.1
Long-term care level	Long-term care level 1	9	24.3
	Long-term care level 2	13	35.1
	Long-term care level 3	10	27.0
	Long-term care level 4	3	8.1
	Long-term care level 5	2	5.4
Independence degree of older people with dementia	I	5	13.5
	IIa	7	18.9
	IIb	12	32.4
	IIIa	10	27.0
	IIIb	3	8.1
Clinical Dementia Rating	0.5	5	13.5
	1	12	32.4
	2	20	54.1
	3	0	0

Table 3 Reliability

			Cronbach's α coefficient
Total			0.852
Well-Being	Pleasure	Pleasure 1	0.894
		Pleasure 2	
	Interest	Interest 1	0.860
		Interest 2	
		Interest 3	
	Self-esteem	Self-esteem 1	0.881
		Self-esteem 2	
		Self-esteem 3	
	Normalcy	Normalcy 1	0.828
		Normalcy 2	
Normalcy 3			
Sustained attention	Sustained attention 1	0.752	
	Sustained attention 2		
	Sustained attention 3		
Ill-Being	Sadness	Sadness 1	0.846
		Sadness 2	0.881
	Negative affect	Negative affect 1	0.661
		Negative affect 2	
		Negative affect 3	

<0.001).

"Sadness" ($P=0.040$), and 0.502 for "Negative affect" ($P < 0.001$).**Inter-rater reliability (Table 4)**

In all seven domains, the absolute value of the difference in scores between two raters was 1 or less. The ICC calculated for the scores of each of the domains obtained by the two raters was as follows: 0.581 for "Pleasure" ($P < 0.001$), 0.590 for "Interest" ($P < 0.001$), 0.570 for "Self-esteem" ($P < 0.001$), 0.455 for "Normalcy" ($P = 0.001$), 0.367 for "Sustained attention" ($P = 0.010$), 0.292 for

Factor analysis (Table 5)

The domains in the Japanese version of the GCCWBOT, compiling 19 items into seven categories, are shown in quotes (" "), and the names of the factors obtained through the factor analysis are shown in brackets ([]). In the factor analysis of the seven domains, a criterion of an eigenvalue of 1 or greater was established when

Table 4 Intra-rater Reliability

Domain	Mean value	Minimum value	Maximum value	Percentage of the absolute value of the difference being 1 or less	Interclass correlation coefficient (ICC)	<i>p</i> value
Pleasure	0.713	0.000	2.630	100.0%	0.581	< 0.001
Interest	0.573	0.000	2.330	100.0%	0.590	< 0.001
Self-esteem	0.706	0.000	2.670	100.0%	0.570	< 0.001
Normalcy	0.820	0.000	2.750	100.0%	0.455	0.001
Sustained attention	0.443	0.000	1.750	100.0%	0.367	0.010
Sadness	3.662	2.500	4.000	100.0%	0.292	0.040
Negative affect	3.844	2.580	4.000	100.0%	0.502	< 0.001

Table 5 Factor analysis of seven domains in Japanese version of the GCCWBOT

number of samples = 105

Domain	Indicator		Factor 1	Factor 2
pleasure	1. The participant has relaxed body language, smiles, and laughs during the activity.	Well-Being	0.840	0.258
	2. The participant verbalizes a sense of pleasure with phrases such as: "this feels good," "this is relaxing," or in the verbal expression of unintelligible phrases such as ooh, aah, accompanied with smiles, crinkling of eyes, or relaxed facial expression.			
Interest	1. The participant shows interest in other participants once the activity is underway.		0.810	0.193
	2. Without promoting, the participant offers support of a peer's participation in an activity by making eye contact, smiling, looking toward the person, or acknowledging the person verbally, one or all of these.			
	3. The participant acknowledges support from peers by eye contact, smile, verbalization, extending hand, one or all of these.			
Self-esteem	1. The participant nonverbally expresses pride in participating and completing a project by smiling nodding happily, tearfulness, clapping.		0.784	0.286
	2. The participant verbally expresses satisfaction after completing a successful activity.			
	3. The participant verbally expresses pride through expressions of reminiscence.			
Normalcy	1. The participant verbally expresses feeling good about being in a group activity, which may be expressed as "I feel normal again," "I don't feel so alone," or other positive statements.		0.756	0.078
	2. The participant nonverbally expresses social normalcy evidenced by one or all of the following: interest in others, sustained attention to task, relaxed body language; if there is an affective reaction, that reaction does not escalate or perseverate.			
	3. The participant, when joining or leaving the activity, chats openly with another, shakes hands, pats back, says or nods good-bye.			
Sustained attention	1. While engaged in the activity, the participant has sustained attention for a period of 10 minutes.		0.687	0.253
	2. The participant requires verbal prompting or cueing during the activity to sustain the project or activity.			
	3. The participant initiates and engages in conversation with peers or facilitator and then returns to activity and refocuses.			
Sadness	1. The participant is sad during the activity as evidenced by one or all of the specified indicators.	Ill-Being	0.179	0.983
	2. The participant verbalizes feeling sad at some point in the activity.			
Negative affect	1. The participant is angry during the activity.		0.074	0.217
	2. The participant is agitated during the activity.			
	3. The participant verbalizes feeling anxious ("I feel nervous," "I am jumpy," "I feel funny today").			
		Eigenvalue	3.857	1.068
		Contribution rate (%)	54.817	15.251
		Cumulative contribution rate (%)	54.817	70.068

selecting factors. Furthermore, in consideration of interpreting the factors, an exploratory factor analysis was conducted based on the maximum likelihood method and varimax rotation. Two factors were identified, and each factor was interpreted. Factor I was named [Well-Being] based on the high factor loading for items "Pleasure", "Interest", "Self-esteem", "Normalcy", and "Sustained attention". Factor II was named [Ill-Being] based on the high factor loading for "Sadness" and "Negative affect". Even though the factor loading for Negative affect was 0.253, and thus less than 0.3, it was categorized as Factor II, since Negative affect is an important configuration

element of the GCCWBOT.

Discussion

The present study examined the reliability and validity of a scale, the Japanese version of the GCCWBOT, which is an assessment tool focusing on the psychological well-being of older adults with dementia.

Cronbach's α coefficient for the entire 19-item and 7-domain Japanese version of the GCCWBOT was 0.852, which indicated high reliability. The α coefficients for the seven domains were between 0.661 and 0.894,

indicating moderate to high internal consistency.

Pearson's correlation coefficients of the seven domains obtained with the test-retest method were between 0.900 and 0.704 ($P < 0.001$), confirming a significant strong positive correlation in each of the domains. Kinney and Rentz,¹⁶ who developed the original English version of the GCCWBOT, mentioned that intra-rater reliability was not examined because there is inherent variability in the behavior of individuals with dementia. It was possible to test intra-rater reliability in this study because the study consisted of watching videos of older adults with dementia participating in visual art therapy sessions.

The absolute value of the difference in scores between two raters was 1 or less for the seven domains, indicating that there was not a large difference in evaluation between two raters. However, the ICC of the seven domains between two raters ranged between 0.292 and 0.590, indicating a fair to moderate level of reliability. The ICC of "Sadness" in particular was a low 0.292. Kinney and Rentz¹⁶ reported the results of examining inter-rater reliability for the English version of the GCCWBOT. When two raters evaluated the condition of five people with dementia participating in a visual art therapy session using the English version of the GCCWBOT, the mean kappa coefficient was 0.65, indicating a moderate to substantial level of reliability. Gross et al.²⁵ also reported the inter-rater reliability of the English version of the GCCWBOT. Two raters used the English version of the GCCWBOT to evaluate the condition of 76 people with dementia participating in visual art therapy sessions. Pearson's correlation coefficients for five domains ("Pleasure", "Interest", "Self-esteem", "Sustained attention", and "Sadness") were between 0.507 and 0.904, which indicated a significant moderate to strong positive correlation. Pearson's correlation coefficients for the other two domains, "Normalcy" and "Negative affect", were 0.442 and 0.416, respectively, and they were not significant. This report showed that the inter-rater reliability of the original English version of the GCCWBOT was insufficient. Rater training and the addition of assessment items have been proposed as measures to improve inter-rater reliability. Similar to the original English version of the GCCWBOT, the inter-rater reliability of the Japanese version of the GCCWBOT developed in this study was marginal. In the present study, the raters conducted the actual evaluations upon receiving an explanation using the user manual of the Japanese version of the GCCWBOT and after practicing evaluations using the training video for the Japanese version of the GCCWBOT. To promote the dissemination of the Japanese version of the GCCWBOT, the inter-rater reliability needs to be improved by means such as modifying the user manual of the Japanese version of the GCCWBOT and improving the training video. Furthermore, since the raters of the present study were undergraduate nursing students who had very little experience caring for older adults with dementia, it may have been difficult for them to interpret the emotions of older adults with dementia through their facial expressions and attitudes. It may be

that "Sadness" in particular was difficult to read from the expressions and attitudes of older people with dementia. Different results in the investigation of inter-rater reliability of the Japanese version of the GCCWBOT may have been obtained if the raters had been staff members at older care facilities who are used to providing care for older adults with dementia, instead of the raters being undergraduate nursing students. The fact that there was a small number of 37 older people with dementia who participated as subjects may have affected the analysis results for inter-rater reliability.

A factor analysis was performed to investigate construct validity. Factor analysis of the seven domains was conducted, and two factors were identified. The results showed that Factor I had high factor loading for "Pleasure", "Interest", "Self-esteem", "Normalcy", and "Sustained attention", and Factor II had high factor loading for "Sadness" and "Negative affect". These results coincided completely with the results of the factor analysis of the original English version of the GCCWBOT reported by Gross et al.²⁵ Gross et al. named Factors I and II, extracted from the factor analysis of the English version of the GCCWBOT, [Well-Being] and [Ill-Being], respectively. Thus, we thought it would be reasonable to call the two factors extracted from the factor analysis of the Japanese version of the GCCWBOT [Well-Being] for Factor I and [Ill-Being] for Factor II. The cumulative contribution rate of Factor I [Well-Being] and Factor II [Ill-Being] of the English version of the GCCWBOT was reported to be 77.39%.²⁵ The cumulative contribution rate of Factor I [Well-Being] and Factor II [Ill-Being] of the Japanese version of the GCCWBOT was 70.07%, which was almost the same as the cumulative contribution rate of the English version of the GCCWBOT. The factor configuration of the Japanese version of the GCCWBOT was found to be similar to the original English version of the GCCWBOT, confirming construct validity of the Japanese version of the GCCWBOT. For content validity, in the process of translating the original English version of the GCCWBOT to the Japanese version of the GCCWBOT, two nursing researchers and one researcher experienced in developing assessment tools in foreign languages repeatedly examined the original English version of the GCCWBOT and the Japanese version of the GCCWBOT, confirming the content validity of the Japanese version of the GCCWBOT as a translated version. Criterion validity was not examined in the present study because there are no assessment tools currently available in Japan that focus on the psychological well-being of older adults with dementia participating in visual art therapy sessions. Criterion validity will need to be considered in the future.

In Japan, the majority of assessments to measure the effectiveness of visual art therapies use evaluation indicators that measure changes in intellectual function or improvements in work efficiency,²⁶ and assessments focusing on psychological well-being have not been available. In the future, the use of the Japanese version of the GCCWBOT developed in this study for evaluating the conditions of older adults with dementia participating

in visual art therapy sessions will allow us to closely capture the emotional changes of older adults with dementia and conduct evaluations that respect their well-being. It is our hope that this will ultimately lead to improving the care of people with dementia. Although the newly translated scale was developed to evaluate the conditions of people with dementia participating in visual art therapy sessions, it is not limited to visual art therapy, and it has the potential to be used in various care activities that target people with dementia. To promote the Japanese version of the GCCWBOT, we plan to examine in the future the possibility of using the Japanese version of the tool during various care activities for people with dementia.

Limitations and Recommendations

The first limitation is the number of older adults with dementia who participated. There were 37 older adults with dementia who participated in the present study. The required sample size to assess reliability and validity of the Japanese version of the GCCWBOT was attained by having the older adults with dementia attend multiple art therapy sessions. Second, the ratings using the newly translated scale were done by young student nurses, rather than experienced staff members of older care facilities, who would be the ones ultimately using this tool. Thus, the current study may lack generalizability with respect to the target user. Third, a ceiling effect was observed for two items in this tool: Negative affect and Sadness. Since a ceiling effect was not reported in the original English version of the GCCWBOT, it may have been a design problem in the present study. A measure to address these problems would be to conduct studies targeting more people with dementia and to perform studies using as raters the staff members at older care facilities. Another limitation is that the ratings were done using videos. The results of the present study may have been different if the raters had been observing the older adults with dementia in actual visual art therapy sessions on site. Further studies are needed to investigate the difference between assessments of actual visual art therapy sessions on site and assessments of the video recordings.

Acknowledgements

The authors gratefully acknowledge all of the participants, the staff at the data collection settings, and all of the raters who were undergraduate nursing students. The authors would like to thank Dr. Michiyo Oka, Dr. Koichi Haga, and Mr. Jonas Engesvik for their helpful support of the Japanese translation of the tool. The authors would also like to thank Mr. T. Matsumura for his helpful support with the statistical analysis. The present study was conducted through the support of a Grant-in-Aid for Scientific Research (JSPS KAKENHI Scientific Research (c) FY 2019-2021); Grant Number 19K11257.

Disclosure statement

The authors declare that they have no competing interests associated with this study. There are no conflicts of interests for this study.

References

1. World Health Organization. Dementia-Fact Sheet 2021. [cited 26 April 2022]. Available from: <https://www.who.int/zh/new-room/fact-sheets/detail/dementia> September 21,2020.
2. Alzheimer's Disease International. ADI -Dementia Statistics. [cited 6 June 2022]. Available form: www.alzint.org/about/dementia-facts-figures/dementia-statistics/.
3. Japanese Ministry of Health, Labor and Welfare. Guideline on Promotion of dementia measures. Available from: <https://www.mhlw.go.jp/content/000522832.pdf>.
4. Kales HC, Gitkin LH, Lyketsos CG. Assessment and management of behavioral and management of behavioral and psychological symptoms of dementia. *BMJ* 2015; 50: h369.
5. Hoe J, Thompson R. Promoting positive approaches to dementia care in nursing. *Nurs Stand* 2010; 25: 47-56.
6. Magierski R, Sobow T, Schwertner E, et al. Pharmacotherapy of Behavioral and Psychological Symptoms of Dementia: State of the Art and Future Progress. *Front Pharmacol* 2020; 11: 1-15.
7. Deshmukh SR, Holmes J, Cardno A. Art therapy for people with dementia. *Cochrane Database Syst Rev* 2018; 9: CD011073.
8. Avrahami D. Visual art therapy's unique contribution in the treatment of post-traumatic stress disorders. *J Trauma Dissociation* 2005; 6: 5-38.
9. Masika GM, Yu DSF, Li PWC. Visual art therapy as a treatment option for cognitive decline among older adults. A systematic review and meta-analysis. *J Adv Nurs* 2020; 76: 1892-1909.
10. Hsieh SW, Hsiao SF, Liaw LJ, et al. Effects of multiple training modalities in the elderly with subjective memory complaints: A pilot study. *Medicine(Baltimore)* 2019; 98: e16506.
11. Curtis A, Gibson L, O'Brien M, et al. Systematic review of the impact of arts for health activities on health, wellbeing and quality of life of older people living in care homes. *Dementia (London)* 2018; 17: 645-669.
12. McEvoy P, Bellass S. Using drawings as a reflective tool to enhance communication in dementia care. *Nurs Stand* 2017; 31: 46-52.
13. Windle G, Gregory S, Howson-Griffiths T, et al. Exploring the theoretical foundations of visual art programmes for people living with dementia. *Dementia (London)* 2018; 17: 702-727.
14. Windle G, Joling KJ, Howson-Griffiths T, et al. The impact of a visual arts program on quality of life, communication, and well-being of people living with dementia: a mixed-methods longitudinal investigation. *Int Psychogeriatr* 2018; 30: 409-423.
15. Geller JD. Introduction: The transformative powers of aesthetic experiences in psychotherapy. *J Clin Psychol* 2018; 74: 200-207.
16. Kinney JN, Rentz CA. Observed well-being among individuals with dementia: Memories in the making, an art program, versus other structured activity. *Am J Alzheimers Dis Other Demen* 2005; 20: 220-227.
17. Rentz CA. Memories in the making© : Outcome-based evaluation of an art program for individuals with dementing illnesses. *Am J Alzheimers Dis Other Demen* 2002; 17: 175-181.
18. Lawton MP. Assessing quality of life in alzheimer disease

- research. Alzheimer Dis Assoc Disord 1997; 11 Suppl 6: 91-99.
19. Lawton MP. Quality of life in Alzheimer disease. Alzheimer Dis Assoc Disord 1994; 8 Suppl 3: 138-150.
 20. Alger K, Woods RT, Windle G. Measuring the quality of life and well-being of people with dementia: A review of observational measures. Dementia (London) 2016; 15: 832-857.
 21. Brislon RW. Back-translation for cross-cultural research. Cross Cult Psychol 1970; 1: 185-216.
 22. Seifpanahi S, Jalaie S, Nikoo MR, et al. Translated version of Voice Handicap Index (VHI)-30 across languages: A systematic review. Iran J Public Health 2015; 44: 458-469.
 23. Sauer PE, Fopma-Loy J, Kinney JM, et al. "It makes me feel like myself": Person-centered versus traditional visual art activities for people with dementia. Dementia (London) 2016; 15: 895-912.
 24. Terwee CB, Mokkink LB, Knol DL, et al. Rating the methodological quality in systematic reviews of studies on measurement properties: a scoring system for the COSMIN checklist. Qual Life Res 2012; 21: 651-657.
 25. Gross SM, Danilova D, Vandehey MA, et al. Creativity and dementia: Does artistic activity affect well-being beyond the art class? Dementia (London) 2015; 14: 7-46.
 26. Kawakubo E. Literature review of assessment indicators for art therapy in elderly individuals with dementia. Paz Bulletin 2013; 15: 87-98 (in Japanese).

SUPPORTING INFORMATION

Supporting Information 1. The Japanese version of The Greater Cincinnati Chapter Well-Being Observation Tool (in Japanese)

Supporting Information 2. A Coding Sheet of the Japanese version of The Greater Cincinnati Chapter Well-Being Observation Tool (in Japanese)

Supporting Information 1 日本語版「The Greater Cincinnati Chapter Well-Being Observation Tool」

ウェルビーイングの領域	指 標
関 心	1. 活動が始まると、他の参加者に対して関心を示す。 2. 参加している仲間が活動に加わるよう、自ら進んで視線を合わせたり、微笑んだり、相手を見つめたり、あるいは言葉をかけたりといった行為のいずれか、あるいはすべてを用いて、働きかける。 3. 仲間からの助けに対して、視線を合わせたり、微笑んだり、言葉で表わしたり、手ぶりといった行為のいずれか、あるいはすべてを用いて応える。
持 続 的 注 意	1. 活動中、10分間は集中して取り組むことができる。 2. 活動中、計画や活動を続けるために、促しや指示の声かけを必要とする。 3. 仲間もしくはファシリテーターに自ら話しかけておしゃべりした後、再び活動に戻って集中して取り組む。
喜 び	1. 活動中、安心してくつろいだ動作、表情をしており、微笑んだり笑ったりする。 2. 「心地よいです」「くつろげます」といった表現や、微笑んだり目を細めるなどくつろいだ表情を伴い「うーん」「あぁ」などの判別できない発声によって、喜びの感覚を言語表現する。
否 定 的 感 情	1. 活動中、怒っている。 2. 活動中、興奮している。 3. 「緊張している」、「不安だ」、「今日はおかしい」などと不安の気持ちを言葉で表現する。
悲 し み	1. 悲しみを示す指標※に明記されている特徴の1つあるいはすべてによって、活動中、悲しんでいることが根拠づけられる。 2. 活動の途中で、悲しみを言葉で表現する。
自 尊 心	1. プロジェクトに参加し最後までやり抜いた満足感を、微笑む、嬉しそうにうなづく、目を潤ませる、手を叩くなどして、非言語的に表現する。 2. 活動をうまくやり遂げた後、満足感を言葉で表す。 3. 回想を語る中で、自尊心を言葉で表現する。
正 常	1. グループ活動に参加して良かったという気持ちを、「また普段の自分に戻った感じがする」、「あまり寂しいと感じない」、もしくは他の肯定的な言葉で表現する。 2. 社会的正常さを次のうち一つあるいはすべてによって非言語的に表す：他人へ関心を持つ、仕事に対する集中力を保つ、動作・表情がくつろいでいる。感情的な反応が見られる場合でも、それが大きくなったり続いたりしない。 3. 活動に加わったり離れたりする際、打ち解けた様子で周りの人とおしゃべりをしたり、握手したり、背中を軽く叩いたり、「さよなら」と言ったり会釈したりする。

※特徴的な指標とは、平坦な影響（アクティビティから何の影響を受けていない）、静かに泣く、場面を通しての悲しい感情の言葉による表現、うなだれた目、嘆き、手を頭にあてる、目や頭を下に向ける、無表情。これらの指標は、それぞれ10分間の観察に基づいて、以下のスケールで採点してください。4=いつも 3=多くの場合 2=ときどき 1=めったにない 0=全くない

Supporting information 2 記入シート

観察日 () 月 () 日 () 観察場所 ()
 アクティビティの名前 () 観察 No. ()

	高年齢者の番号 ()				高年齢者の番号 ()				高年齢者の番号 ()							
	10	1	20	2	30	3	40	4	10	1	20	2	30	3	40	4
関心	時間 (分) / 回 開始時間															
関心	1. 他人への関心, 2. 進んで仲間の手助けができる, 3. 仲間からの助けに感謝する.															
持続的注意	1. 活動中, 注意力を保つ. 2. 声掛けや促すことが必要, 3. 話しかけたり, おしゃべりをしたりする.															
喜び	1. くつろいだ動作, 微笑み, 笑い, 2. 喜びを言葉で表す. 1. 怒り.															
否定的感情	2. 興奮が身体に表れている, 3. 不安感を言葉で表す.															
悲しみ	1. 悲しみを示す行動をとる, 2. 悲しみを言葉で表す.															
自尊心	1. 満足感を非言語的に表現する, 2. 満足感を言葉で表す. 3. 自慢の思い出をほのめかさす.															
正常	1. 正常な状態であることを言葉で表す. 2. 社会的な正常な状態であることを非言語的に表す. 3. 活動の初めと終わりに挨拶をする															

これらの指標は、それぞれ10分間の観察に基づいて、以下のスケールで採点してください。4=いつも 3=多くの場合 2=ときどき 1=めったにない 0=全くない