

学位論文

An examination of the psychometric properties of the occupational identity
questionnaire for community-living elderly who require care

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Abstract

Introduction: Authors created an Occupational Identity Questionnaire Provisional version (OIQ-P) to assess occupational identity for elderly individuals. The purpose of this study was to examine the psychometric properties of the OIQ-P.

Methods: Participants included 135 (42 males) elderly who lived locally and required care or support. OIQ-P was evaluated in terms of structural validity, criterion validity and internal consistency.

Results: Based on the results of an exploratory factor analysis and confirmatory factor analysis, an OIQ with a factor structure of 3 factors and 14 items was created. Rasch rating scale model revealed that 14 participants and 1 item did not fit the goodness of fit, nevertheless, the overall result was good. Spearman's rank correlation coefficient indicates that there was a low correlation between OIQ and the occupational identity scale of the Occupational Performance History Interview Version 2. In terms of internal

consistency, the person separation index and person separation reliability coefficient were 2.30 and 0.84, respectively.

Conclusion: This study confirmed the structural validity, criterion validity and internal consistency for the OIQ. To enhance the clinical utility of the OIQ, it is necessary to examine the interpretability and conduct an intervention study using the OIQ.

Keywords: Model of human occupation, occupational identity, elderly people, assessment, occupational therapy

Introduction

It is necessary for occupational therapists to create an occupational profile of clients that describe the client's occupational history, occupational context, occupational goals as evaluation (American Occupational Therapy Association, 2014). One important element for an occupational profile is the client's perceptions (Chishonlm & Schell, 2019). Occupational identity refers to defining who a person considers themselves to be and who they aspire to become as an occupational being (Kielhofner, 2008). Evaluating clients' occupational identity is beneficial for occupational therapists in the creation of an occupational profile.

Over the past decade, the elderly population has been increasing worldwide (United Nations, Department of Economic and Social Affairs, Population Division, 2017), and thus the need for occupational therapy practice for the elderly is also increasing. Considering a life-course perspective is useful to improve health among the elderly (Chapko et al.,

2016), therefore, it is important to include information on the occupational identity of the elderly in an occupational profile.

Based on the Model of Human Occupation (MOHO), the Occupational Performance History Interview Version 2 (OPHI-II) and Occupational Self-Assessment (OSA) can be used to evaluate occupational identity for elderly people (Hemmingsson et al., 2017). OSA evaluates the clients' value which is one of the components of occupational identity (Yamada & Ishii, 2004). The OPHI-II is used to assess occupational identity comprehensively. Based on the results of this semi-structured interview, therapists obtain scores from a rating scale for occupational identity. The OPHI-II has proven to be a valid assessment and can be used in a wide range of populations of various ages, diagnoses, cultures, and languages (Kielhofner et al., 2001). The usefulness of OPHI-II has been reported in several studies (Apte et al., 2005; Ennals & Fossey, 2009). Although the OPHI-II is a useful assessment, it is not designed to specifically measure occupational identity among older adults,

and it contains several questions mainly for adolescents and adults (Forsyth, 2017). The interview requires approximately 45 to 60 minutes to complete and is not easy to conduct with the elderly who require care, as they can have issues with stamina or attention deficits. Furthermore, to enhance patient outcomes and quality of care, patient-reported outcomes (PRO) which include information or data provided directly by the patient are important (Chen et al., 2013; Greenhalgh & Meadows, 1999). However, the OPHI-II is not a self-report measure. Since the need for the provision of occupational therapy services for the elderly is expected to increase in the future, self-reported outcomes specialized for the elderly will be beneficial. The assessment of occupational identity allows occupational therapists to determine if a client's occupational identity is dysfunctional. Therefore, the authors here have developed a self-report assessment of the occupational identity of elderly people.

Although Japan has the highest percentage of the elderly in the world

(Cabinet office, 2018), there is currently no research investigating the occupational identity of elderly individuals. Hence, a qualitative study was conducted to clarify this (Shikata et al., 2016). Based on results herein, a questionnaire was generated to assess the occupational identity of the elderly, and the content validity was examined in a Delphi survey by 26 experts (Shikata et al., 2020). Furthermore, the face validity of the questionnaire items was examined for elderly people living in the community, and the occupational identity questionnaire provisional version (OIQ-P) was prepared. The purpose of this study was to examine the psychometric properties of the OIQ-P. We considered that the OIQ would contribute to an occupation-centered practice for elderly people living in the community.

Methods

Participants

The participants were recruited from 21 facilities that provide daytime

rehabilitation service and home visit rehabilitation service in 11 prefectures in Japan, such as Hokkaido, Akita, Tokyo, Shizuoka, Okayama, and Fukuoka prefectures, etc. The inclusion criteria were: people aged 65 and over who lived locally and required care or support. The exclusion criteria were impaired cognitive functions, such as dementia and higher brain dysfunction. Before data collection, all participants and occupational therapists were informed about the purpose of this study and provided written informed consent prior to participation.

Data collection

Participants completed the OIQ-P and the Japanese version of the 5-level EQ-5D version (EQ-5D). Occupational therapists from each institution evaluated the occupational identity scale of the OPHI-II and Barthel Index. Demographics such as age, gender, types of long-term care or support required, and type of care service were collected.

The OIQ-P consists of 21 items and each item is rated on a 4-point scale

(Strongly Disagree, 1; Disagree, 2; Agree, 3; Strongly Agree, 4). The total points range from 21 to 84 points. OIQ-P is shown in Table 1.

The EQ-5D measures health-related quality of life and consists of five dimensions about clients' health status as assessed at five levels of description (EuroQol Research Foundation, 2019). The summary index score for health status is derived based upon a value set.

The OPHI-II is an assessment that was developed based on the MOHO as a historical interview. With this tool, a therapist conducts a semi-structured interview using the interview guide (Hemmingsson et al., 2017). Following the interview, the therapist assigns scores using three rating scales: the occupational identity scale (11 items), the occupational competence scale (9 items), and the occupational settings scale (9 items). Each item is rated on a 4-point scale (Extremely occupationally dysfunctional, 1; Some occupational dysfunction, 2; Appropriate satisfactory occupational functioning, 3; Exceptionally competent occupational functioning, 4). To

assess the criterion validity of the OIQ-P, occupational identity scale of the OPHI-II scores were used as external criteria. The range of the total score of occupational identity scale is 11 to 44 points.

Analysis

Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) is a comprehensive methodological guideline for the assessment of the methodological quality of Patient-Reported Outcome Measures (PROMs) and we used the checklist (Mokkink et al., 2018).

According to the COSMIN, next to content validity, it is also necessary to consider structural validity and internal consistency as the order of psychometric measurement. Finally, it is recommended that measurement properties such as criterion validity and responsiveness also be examined.

Therefore, we evaluated the psychometric properties of OIQ-P in terms of structural validity, internal consistency, and criterion validity.

Structural validity

To examine the factor structure of OIQ-P, an exploratory factor analysis (EFA) was conducted by using promax rotation and maximum likelihood methods. Items with a factor loading of 0.40 or less were excluded and factor analysis was repeated multiple times. The factors to be retained was determined by assessing eigenvalue, the screen plot and the interpretability. IBM SPSS Statistics 25 was used to conduct EFA.

To further verify the factor structure as examined by EFA, we conducted confirmatory factor analysis (CFA), using structural equation modeling (SEM). The estimation method was weighted least squares with mean and variance adjusted test statistic (WLSMV) which is appropriate for ordinal data. Model fit was assessed with various indices, including Chi-square divided by degrees of freedom (χ^2/df), Comparative Fit Index (CFI), Standardized Root Square Mean Residual (SRMR) and Root Mean Squared Error of Approximation (RMSEA). The criteria for good fit were $\chi^2/df \leq 3.00$, $CFI > 0.90$, $SRMR \leq 0.08$, $RMSEA < 0.08$ (Hair et al., 2014). R3.6.2 was

used to conduct the CFA.

Next, we confirmed the structural validity using the Rasch rating scale model (RSM). The Rasch model is a unidimensional measurement model (Tennant & Conaghan, 2007), therefore, unidimensionality was checked using CFA. The criterion is to satisfy $CFI > 0.95$, $SRMR < 0.08$, or $RMSEA < 0.06$ (Mokkink et al., 2018). A goodness-of-fit index was adopted with infit mean square (infit MnSq) and standardized as a z-score (Zstd). As OIQ is rated by self-report assessment, the criterion for evaluating person and item goodness-of-fit were the rejection of infit MnSq values > 1.4 logit associated with a z value > 2.0 (Bond & Fox, 2007). It is desirable that the number of persons and items that fail goodness-of-fit should be less than 5.0% of the total number (Tham, Birgitta & Fisher, 1999). Facets 3.83.0 was used to conduct the Rasch analysis of the OIQ.

The Rasch model converts ordinal data to equal-interval measures. Therefore, if there were participants who did not fit the criteria, to confirm

the characteristics of the underlying ordinal scale data, we calculated the median and interquartile range of those who fit the criteria and those who did not.

Criterion validity

Spearman's rank correlation coefficient was used to examine criterion validity. The significance level was set at 5%. IBM SPSS Statistics 25 was used to calculate the correlation coefficient.

Internal consistency

To evaluate reliability, Person separation index and Person separation reliability coefficient were examined. The Person separation reliability coefficient is equivalent to Cronbach's alpha (Tennant & Conaghan, 2007).

It is desirable that the person separation index is 2.0 and person separation reliability coefficient is 0.80 or higher (Árnadóttir & Fisher, 2008). The data analyses were performed with Facets 3.83.0.

Research ethics

The study received ethical approval from the ethical committee of Tokyo Metropolitan University (Ref. no. 18093).

Results

Demographic of participants

Table 2 presents the demographic characteristics of participants, with 135 participants included for analyses (42 males). The most common types of long-term care or support required were Support Required 2 (28.1%), followed by Care Level 2 (23.0%), Care Level 1 (20.7%). 76.3% of participants used daytime rehabilitation service, and 49.6% of participants had been using the service for 1 to 4 years.

Structural validity of OIQ

Seven items were deleted in EFA, finally, OIQ-P was restructured with 14 items and a three-factor structure. The final placement of items within the three-factor solution is reported in Table 3. The factors were assigned the

following names: Sense of present self and future expectations (7 items), Sense of past self (5 items), Satisfaction with the current circumstances (2 items).

According to the EFA results, we further tested this three-factor structure with a CFA. Figure 1 shows the CFA results. The findings revealed that the model fit the data reasonably well ($\chi^2/df = 1.16$; CFI = 0.95; SRMR = 0.07; RMSEA = 0.034). Based on the results of EFA and CFA, we determined the OIQ (final version) with 14 items and a three-factor structure.

The unidimensionality of OIQ was confirmed from the EFA results, the OIQ was analyzed using the RSM. As a result, 14 participants (10.37%) and 1 item (7.14%) were excluded. The results of the RSM are shown in Table 4.

Table 5 shows the median and interquartile ranges for those who met the fit criteria and those who did not. For participants who fit, the median was all 3.0 and the interquartile range was 0.0-1.0, while for participants who misfit the median was often 4.0 and the interquartile range was wide 0.0-2.8.

Criterion validity of OIQ

The correlation between the total score of OIQ and occupational identity scale of OPHI-II was significant but weak ($r=.278$, $p<0.01$: Spearman's rank correlation coefficient).

Internal consistency of OIQ

The Person separation index for OIQ was 2.30 and person separation reliability coefficient for OIQ was 0.84.

Discussion

Validity and reliability of OIQ

This research was carried out to develop an OIQ that allows for a reliable self-report measure of occupational identity among elderly patients who live in the community and require care or nursing. The structural validity, criterion validity, and internal consistency were evaluated as psychometric characteristics of an OIQ-P, which was developed in previous research. As a

result, we believe that we have successfully developed an OIQ comprised of 3 factors and 14 items.

First, EFA was carried out in the evaluation of the structural validity. The 3-factor structure was considered to be valid based on the results, and 7 of the items where the factor loading did not reach 0.40 were deleted, which left 14 items remaining. Item 13 “I have fun in my life.” had a factor loading that exceeded 0.40 in Factor 1 and Factor 2. Reflecting the theoretical and conceptual aims is important for the factor structure (Williams et al., 2012). The occupational identity includes what things one finds interesting and pleasurable to do (Kielhofner, 2008). Thus, we preferred not to exclude Item 13.

As indicated by the results of a CFA which was based on a factor structure obtained from the EFA, all of the fit indices satisfied the fit criteria (Hair et al., 2014). The OIQ consisting of 14 items was considered to be comprised of three factors, namely “sense of present self and future expectations,”

“sense of past self,” and “satisfaction with the current circumstances.” It was considered valid to include “satisfaction with the current circumstances” and “sense of past self” in the factor structure because occupational identity is also a composite sense of the person regarding oneself and their future as an occupational being (Kielhofner, 2008). Additionally, occupational identity includes a recognition of a sense of desired and possible direction for one’s future (de las Heras et al., 2017). It is considered that one of the three factors, “satisfaction with the current situation,” includes such an aspect.

Based on the results of analysis using RSM, data for 14 (10.37%) participants did not fit, and one (7.14%) of the items did not fit, which exceeded 5% (ideal value). Concerning reliability, the subject separation index was 2.30 and the subject separation reliability coefficient was 0.84. A subject separation index of 2.0 and a subject separation reliability coefficient of at least 0.80 are considered to be ideal (Árnadóttir & Fisher, 2008).

Upon comparing the interquartile range and the median value for misfit

participants and fit participants, the misfit participants were considered to have satisfactory occupational identity and also tended to exhibit extreme responses to four-point ranking scales. These participants' data did not conform well to the Guttman pattern, and as such were considered a poor fit for RSM. OIQ is a self-reporting-based outcome, thus we concluded that it is possible to use the OIQ to obtain subjective information regarding clients. However, caution is required when interpreting the report details based on the results of misfit clients. Thus, we can confirm the structural validity and reliability of the OIQ, whereby we considered that the OIQ could also be applied to participants for whom some data were a poor fit.

Based on the difficulty ranking, the level of difficulty was lower for the items that relate to "sense of past self" compared with the items relating to "satisfaction with the current circumstances" and "sense of present self and future expectations." In research that examined the psychometric properties of the OPHI-II, items pertaining to the present, such as having goals and

projects, and accepting responsibilities require a sense of action and striving, therefore, items for the present had a higher calibration than the items pertaining to the past (Kielhofner et al., 2001). It is considered to be difficult for participants that require care or nursing in handling their daily lives to have personal goals for the future and have a sense of their own capability and effectiveness. Thus, the results were considered to be valid.

Although a significant correlation was observed between the concurrent validity and OIQ based on the occupational identity scale, this correlation was weak ($r=0.278$). In the OPHI-II, the occupational therapist evaluated the client's occupational identity based on the content of the interview, while in the OIQ, participants subjectively judged whether there were issues with his or her own occupational identity. It is considered that this difference in judgment caused the low correlation. Overly strong correlations with existing scales will lead to poor uniqueness of the developed scale (Yokouchi, 2007). Both the OPHI-II and OIQ evaluate occupational identity, but the OIQ

is unique in that it provides information regarding how clients interpret their occupational identity.

Future research and limitations associated with this research

The sample size of participants in the present study satisfied the criteria indicated in COSMIN. However, the RSM analysis results did not achieve a ratio of less than 5% between the number of items and the number of participants with fit criteria. The primary cause of this is believed to be due to participants who exhibited differential responses. Thus, future research should be conducted with a larger sample of participants to validate these results. Moreover, there will be a need to increase the clinical utility of the OIQ. Therefore, our future research goals include the evaluation of the interpretability of the OIQ and conducting a case study using OIQ in occupational therapy.

Conclusion

This study confirmed the structural validity, criterion validity and internal consistency for the OIQ. The OIQ is a reliable and valid self-report measure for the assessment of the occupational identity of elderly people. To enhance the clinical utility of the OIQ, it is necessary to examine the interpretability and conduct an intervention study using the OIQ.

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Table 1. Items of the Occupational Identity Questionnaire Provisional version

- 1 Previously, I was doing things that I felt were fun.
 - 2 Previously, I felt a rewarding sense of satisfaction about work and homemaking.
 - 3 Previously, I lived with a sound mind and body.
 - 4 Previously, I felt that I was helpful to others.
 - 5 Previously, I did well despite challenges.
 - 6 Previously, I did well with other people.
 - 7 Although I have my own thoughts, I think I will also ask other people's opinions.
 - 8 I cannot do as I did when I was young, but I think that I am doing well.
 - 9 There are some hardships, but I try not to think about such things alone.
 - 10 I think someone helped me to live my life.
 - 11 There is something I have to do to maintain my current life.
 - 12 I think that I should do things for myself.
 - 13 I have fun in my life.
 - 14 I think that there is a person who understands my feelings and I am satisfied with that.
 - 15 I think I can do better than others think.
 - 16 I think that I live as I expected I would.
 - 17 Rather than having nothing to do, it is better to have something to do.
 - 18 From now on as well, I want to meet the expectations around me.
 - 19 I want to live happily in the future.
 - 20 From now on as well, I want to do what I can do.
 - 21 I would like to challenge myself to do what I do not do now.
-

Table 2. Characteristics of study participants (n= 135)

Age (years)		82 .0 (6.8)
Gender (n)		
	Male	42 (31.1)
	Female	93 (68.9)
ADL		
	Barthel Index	95 (50-100)
Types of long-term care or support required (n)		
	Support Required 1	23 (17.0)
	Support Required 2	38 (28.1)
	Care Level 1	28 (20.7)
	Care Level 2	31 (23.0)
	Care Level 3	8 (5.9)
	Care Level 4	5 (3.7)
	Care Level 5	2 (1.5)
Type of care service (n)		
	Daytime rehabilitation service	103 (76.3)
	Home-visit rehabilitation service	32 (23.7)
Period of using services (years)		
	< 1	32 (23.7)
	1-4	67 (49.6)
	5-9	26 (19.3)
	10+	10 (7.4)
EQ-5D		0.67 (0.16)

ADL: Activities of Daily Living, EQ-5D: The 5-level EQ-5D version

Age is presented as mean (SD), Barthel Index is presented as median (range),

EQ-5D is presented as mean (SD), others are presented as n (%).

Table 3. Exploratory factor analysis of the Occupational Identity Questionnaire
Provisional version

	Items	Factor loadings		
		1	2	3
17	Rather than having nothing to do, it is better to have something to do.	.840	.030	-.203
19	I want to live happily in the future.	.670	.009	.079
18	From now on as well, I want to meet the expectations around me.	.666	-.157	.096
21	I would like to challenge myself to do what I do not do now.	.610	.059	-.133
20	From now on as well, I want to do what I can do.	.500	.154	.133
13	I have fun in my life.	.435	-.109	.405
8	I cannot do as I did when I was young, but I think that I am doing well.	.433	.015	.104
3	Previously, I lived with a well mind and body.	.066	.759	-.110
4	Previously, I felt that I was helpful to others.	-.074	.694	-.002
5	Previously, I did well despite difficulties.	.055	.559	.027
6	Previously, I did well with other people.	-.013	.540	.065
2	Previously, I felt a rewarding sense of satisfaction about work and homemaking.	-.037	.484	.210
14	I think that there is a person who understands my feelings and I am satisfied with that.	-.106	.016	.970
16	I think that I live as I expected I would.	.106	.128	.480

Data in bold indicates which factor the items belong to.

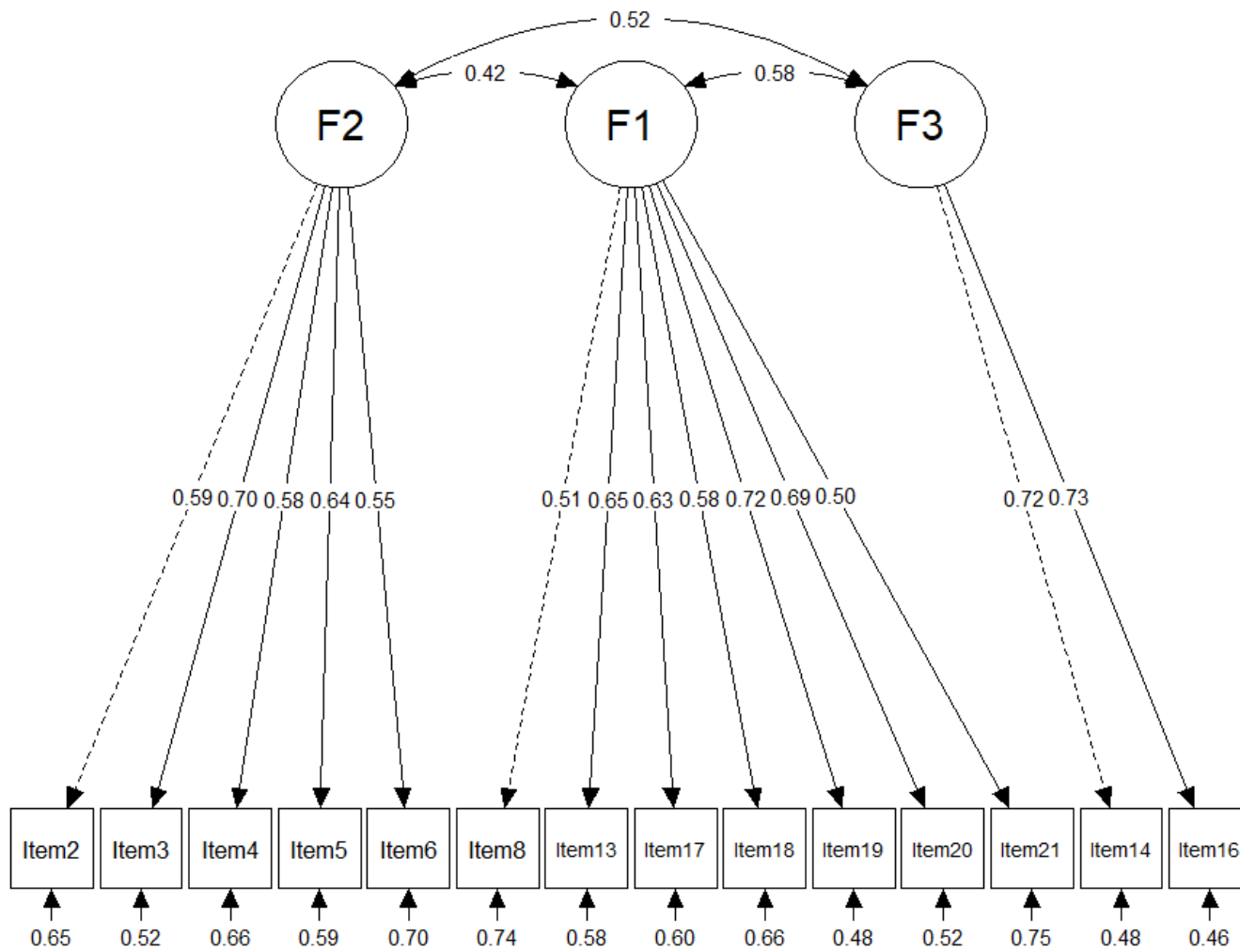


Figure 1. Confirmatory factor analysis of the Occupational Identity Questionnaire Provisional version

Table 4. Item fit statistics for the Occupational Identity Questionnaire

Items	Item difficulty measure	Standard error	Infit MnSq	Zstd	
Sense of past self					
2	Previously, I felt a rewarding sense of satisfaction about work and homemaking.	-0.37	0.18	1.43	2.7
3	Previously, I lived with a well mind and body.	-0.88	0.18	1.15	1.1
4	Previously, I felt that I was helpful to others.	0.13	0.17	1.20	1.3
5	Previously, I did well despite difficulties.	-1.07	0.18	0.90	-0.7
6	Previously, I did well with other people.	-0.31	0.18	1.01	0.1
Sense of present self and future expectations					
8	I cannot do as I did when I was young, but I think that I am doing well.	0.78	0.16	0.95	-0.2
13	I have fun in my life.	0.63	0.16	0.96	-0.2
17	Rather than having nothing to do, it is better to have something to do.	-0.50	0.18	0.94	-0.3
18	From now on as well, I want to meet the expectations around me.	0.63	0.16	1.03	0.2
19	I want to live happily in the future.	-0.66	0.18	0.76	-1.9
20	From now on as well, I want to do what I can do.	-0.72	0.18	0.56	-3.8
21	I would like to challenge myself to do what I do not do now.	1.11	0.15	1.19	1.4
Satisfaction with the current circumstances					
14	I think that there is a person who understands my feelings and I am satisfied with that.	0.30	0.17	0.99	0.0
16	I think that I live as I expected I would.	0.95	0.15	0.80	-1.5

Infit MnSq: infit mean square, Zstd: standardized as a z-score

Table 5. Comparison of the scores between of fit person with misfit person.

	Items	Fit person Median (IQR)	Misfit person Median (IQR)
2	Previously, I felt a rewarding sense of satisfaction about work and homemaking.	3.0 (1.0)	4.0 (0.0)
3	Previously, I lived with a well mind and body.	3.0 (1.0)	4.0 (1.0)
4	Previously, I felt that I was helpful to others.	3.0 (0.0)	4.0 (1.0)
5	Previously, I did well despite difficulties.	3.0 (1.0)	4.0 (0.0)
6	Previously, I did well with other people.	3.0 (0.0)	4.0 (0.0)
8	I cannot do as I did when I was young, but I think that I am doing well.	3.0 (0.0)	3.0 (1.8)
13	I have fun in my life.	3.0 (0.0)	3.5 (1.0)
14	I think that there is a person who understands my feelings and I am satisfied with that.	3.0 (0.0)	4.0 (1.0)
16	I think that I live as I expected I would.	3.0 (1.0)	4.0 (1.0)
17	Rather than having nothing to do, it is better to have something to do.	3.0 (1.0)	4.0 (0.0)
18	From now on as well, I want to meet the expectations around me.	3.0 (0.0)	3.0 (2.8)
19	I want to live happily in the future.	3.0 (1.0)	4.0 (0.8)
20	From now on as well, I want to do what I can do.	3.0 (1.0)	4.0 (0.8)
21	I would like to challenge myself to do what I do not do now.	3.0 (1.0)	3.0 (2.0)

IQR : interquartile range