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UNIVERSITY OF JYVASKYLA ACTIVE AGING SCALE: THE STUDY OF VALIDITY AND RELIABILITY

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ABSTRACT

The purpose of this study is to conduct the Turkish validity and reliability analysis of Active Aging Scale (University of Jyvaskyla Active Aging Scale: UJACAS) developed by Rantaten and others (2018a). Survey method was used in the research. Participants of the study are residents of Ankara Keçiören Nursing House and members of Turkey Pensioners' Association of Ankara Branch. Also participants consist of 146 people over 65 years of age. Data were collected by demographic information, Active Aging Scale and Satisfaction with Life Scale. IBM SPSS Statistics 23 program and Winsteps program were used to analyze the data. Test-retest reliability coefficient and Cronbach's alpha reliability coefficient values of the scale total and sub-dimensions were found to be over 0.90. In addition, Active Aging Scale (AAS) was found to be a good fit (internal structure validity) and reliable (PSI = 0.97) scale according to the goodness of fit statistics and reliability values of Rasch model. As a result of the analyzes, It was concluded that the scale was adequate to the Rasch model and the total scale score consisted of 4 subscales (Goals, Functional Capacity, Opportunity and Activity) including one-dimensional active aging implicit structure. Aforementioned scale was determined to be a reliable and valid measurement tool that can be used to determine the level of active aging of elderly individuals in Turkey who are 65 years of age and older.

Keywords: Validity, reliability, active aging scale, rasch analysis.

INTRODUCTION

Although there is no single definition of aging, which is a multifaceted and complex process with biological, psychological and social aspects; according to the United Nations Population Fund, it is a period of life that occurs with aging, social roles, economic conditions, changes in mental and physical activities (UNFPA, 2012).

Today, the increase in the proportion of the elderly population in the total population has brought along the problems of the elderly population that need to be solved psychologically, socially, culturally and economically. (Kurt, Beyaztaş and Erkol, 2010). Cultural, social, environmental and economic losses as well as physical health losses during the aging process are inevitable (Özmete, 2012:15; Sözen, 2014:38). Especially the deterioration of health, death of the spouse, decrease in income, insufficiency of social security are some of the important problems experienced in this period (Özmete, 2008: 10).

With the aging of societies and problems experienced in the old age, there are problems waiting for solutions such as how individuals will remain independent and active as they get older, and how to improve the quality of life of individuals in prolonged life. In this context, the search for new solutions, which will solve the problems of the elderly and ensure the well-being of the elderly and enable the society to cope with the problem of old age, has started to emerge (Boudiny, 2013).

Thus, the concept of active aging, which has begun to take its place in the aging literature, is actually based on the activity theory put forward in 1940s. The activity theory opposes the theory of withdrawal, which advocates that people are withdrawing from life and being isolated from society as age advances, and emphasizes the importance of maintaining an active life and life satisfaction even at an advanced age (Cumming and Henry, 1961). Active aging approach developed by World Health Organization in 2000s; expresses that aging is related to health and social services, behavioral factors, personal factors, social factors, economic factors and physical environment. The concept of Active Aging, first expressed in the Active Aging Policy Paper in 2002; ''*active aging is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age*'' (WHO, 2002).

The definition of active aging in the WHO Active Aging Policy Document describes the concepts of health, security and participation:

Being Healthy; is represented by physical, social and mental well-being. Maintaining good health is the most important point in the context of the active life of elderly individuals. Because an active life is not possible for an individual who has lost his health and has become completely dependent on others. Therefore, the first premise of individuals to undergo an active aging process is probably due to optimum health conditions. It also advocates that if both environmental and behavioral factors are reduced and protective factors are increased for chronic disorders, quality of people's life will increase.

Security; emphasizes the access of elderly individuals to safe and secure physical and social environment and income security. It contains economic factors within the principle of security. The economic factors affecting the active aging process are; income, working life and social security of elderly individuals. This means that policies and programs on this issue should address the social, economic and physical security needs of people as they get older. In such cases, if they cannot support and protect themselves, people are protected and their dignity and care is guaranteed.

Participation; It emphasizes that labor market, employment, education, health and social policies and programs should be conducted in a way to support the participation of the elderly in socioeconomic, cultural and spiritual activities according to their basic rights, capacities, needs and preferences. In other words, it represents a series of multifaceted activities (social, economic, cultural, spiritual, etc.) for older individuals. In this way, they will continue to contribute to society through paid and unpaid activities with the awareness that formal work, informal work and voluntary occupations should be supported in order to increase activity and productivity of elderly (WHO, 2002).

Furthermore, the term of active in the concept refers to a continuous participation in social, economic, cultural, spiritual and civic issues, not when people are physically well or working (Özmete, 2013). The concept of active aging includes an approach that includes the participation of the elderly through volunteering, the ability to live independently by the appropriate housing and infrastructure (European Commission, 2012). The elderly, retired, sick or disabled people may also have an active life by contributing to their families, peers, various communities and nations. Active aging aims to prolong healthy aging and improve the quality of life for all aging individuals, including weak, disabled and in need of care (WHO, 2002).

As it is understood from these definitions, active aging involves providing more opportunities for older people to continue working, to stay healthy, to participate and contribute to society even if they are disabled and need care (Walker and Maltby, 2012: 50).

Apart from WHO's Active Aging model, many indices such as Hartford Aging Index (Goldman and others, 2018), Global Agewatch Index (HelpAge International, 2015), Index of Well-Being (Canadian Index of Wellbeing, 2018), Successful Aging Index (Ng et al., 2018) are used to analyze the current situation for the elderly in order to develop social policies. One of them is Active Aging Index (AAI) developed by Zaidi and others (2013). The index is defined as a tool that measures the potential of the elderly not used for active and healthy aging at national and international levels. In addition, it measures the level of elderly people's independent living, paid employment and participation in social activities and their active aging capacity. According to index, the components of active aging are defined as employment, participation, independent, healthy and safe life, capacity for active aging and a favorable environment (UNECE, 2015).

When the studies on the subject are examined, there is active aging scale (University of Jyvaskyla Active Aging Scale: UJACAS) which is developed by Rantanen and others (2018a) except the indices mentioned above, active

aging policy document (WHO, 2002) and Active Aging Index (Zaidi and others, 2013). The conceptual framework of the scale describes in figure-1.

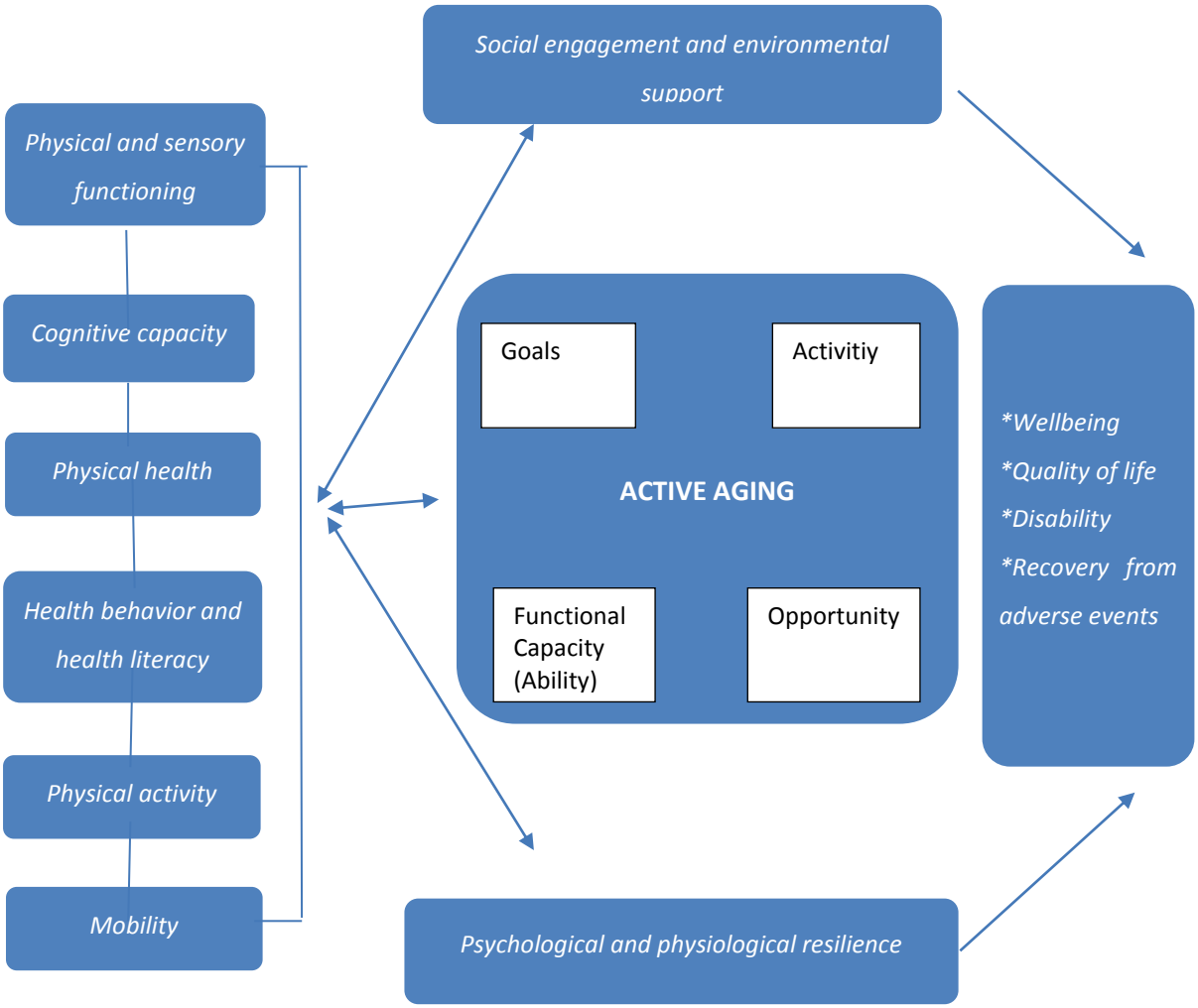

Figure 1. Conceptual Framework of the Active Aging

(Referance: Rantanen and others (2018b). Active Aging-resilience and external support as modifiers of the disablement outcome: AGNES cohort study protocol. BMC Public Health.doi:10.1186/s12889-018-5487-5.)

This scale, developed by Rantanen and others (2018a), includes other indices and studies and, unlike them, measures the level of active aging of individuals dependent from active aging policies. In Figure 1, the conceptual framework of the active aging is described (Rantanen and others, 2018b). Active aging refers to the activity as per one's goals, opportunities and abilities. It mediates or modulates the association of health and functioning with disability and wellbeing, while social engagement, environmental support and resilience influence this process, especially when facing adverse events.

METHOD

Sample

Participants of the study are residents of Ankara Keçiören Nursing House and members of Turkey Pensioners' Association of Ankara Branch. Also participants consist of 146 people aged 65 and over. Questionnaire was applied Both Keçiören Nursing House and Turkey Pensioners' Association in order to include elderly people of different qualifications in the sample. Also questionnaire was applied by face to face interview technique. The age of the participants ranged from 65 to 94 years and the average age was 70.84. It is seen that the number of female and male participants is equal by chance. 65.8% of the participants had moderate income, 64.4% were married, 34.9% were primary school graduates, 56.8% were retired, 44.5% lived with their spouse, 59.6% had a diagnosed disease. The perceived health status of 49.3% was found to be good. In addition, the majority of the elderly who participated in the study had diabetes, heart and blood pressure diseases (Table-1).

Table 1. Demographic Variables

		N	%
Gender	Male	73.0	50.0
	Female	73.0	50.0
Age(m.±s)		70.84±6.955	
Education	Illiterate	6.0	4.1
	Primary school	51.0	34.9
	High school	42.0	28.8
	College	19.0	13.0
	University	23.0	15.8
	Master	5.0	3.4
Perceived income	Low	28.0	19.2
	Middle	96.0	65.8
	High	22.0	15.1
Marital status	Married	94.0	64.4
	Single	5.0	3.4
	Divorced	9.0	6.2
	Widowed	38.0	26.0
Working status	Full day	18.0	12.3
	Half day	2.0	1.4
	Retired	83.0	56.8
	Not working	43.0	29.5
Way of living	Alone	34.0	23.3
	With spouse	65.0	44.5
	With spouse and children	28.0	19.2
	With children	15.0	10.3
	With relatives	2.0	1.4
	With friends	1.0	0.7
	Other	1.0	0.7
Disease diagnosed by a doctor in hospital or health institution	Yes	87.0	59.6
	No	59.0	40.4
Perceived general health	Very good	15.0	10.3
	Good	72.0	49.3
	Moderate	47.0	32.2
	Bad	11.0	7.5
	Very bad	1.0	0.7

Data Collection Tools

The research data were collected via a measurement tool comprising three parts: first, a demographic information form, second, Active Aging Scale and third, The Satisfaction with Life Scale.

Demographic Information

It consists of questions to determine the socio-demographic characteristics of elderly individuals such as age, gender, perceived income, way of living, marital status.

Active Aging Scale

Active Aging Scale was developed by Rantanen and others (2018a). Written (e-mail) communication was established with the researcher and permission was required to adapt the scale to Turkish. In addition, permission was obtained from Hacettepe University Ethics Committee for the application of the questionnaire to the participants. The Active Aging Scale was initially composed of 24 items and was reduced to 15 items after the pilot study. However, it was decided to add two more questions based on the feedback from the focus group study with the elderly by Rantanen and others (2018a) and the final scale consisted of 17 items. Active Aging Scale is composed of 17 (seventeen) different activity questions prepared to measure the active aging of individuals in contrast to active aging policies which are mostly goal-oriented actions of authorities. These questions are asked from 4 (four) subscales from different perspectives. The different perspectives determined by these four subscales are defined as four main centers of active aging of individuals. These four subscales are as follows.

1)Their goals (what they want to do),
2)Their functional capacity (what they are able to do),
3)Their autonomy (perceived opportunities to do the valued activities),
4)Their activities (what they actually do).

Each statement in the questionnaire was scored from 0 to 4 in five point likert type scale as in the original, scored from 0 (lowest, for example, least active) to 4 (highest, for example, most active). In the goals section, participants were asked *"How strongly have you wanted to do the following things during the past four weeks?"* and the answer was scored not at all = 0, only a little= 1, to some extent = 2, fairly strong = 3, very strongly = 4. In the functional capacity section, participants were asked "*Bearing in mind your state of health and your capacity, have you or would you have been able to do the following things during the past four weeks?"* and the answer was scored not even with help=0, not without help from another person=1, yes but with a lot of difficulty=2, yes with some difficulty=3, yes without any difficulty=4. In the opportunities section, participants were asked "*Thinking about your life in general, how have you experienced your possibilities to do the following things during the past four weeks?"* and the answer was scored it has not been possible=0, limited=1, moderate=2, rather good=3, very good=4. In the activities section, participants were asked "*How*

often have you done the following things during the past four weeks?" and the answer was scored not at all=0, less than once a week=1, about once a week=2, 2-4 times a week=3, daily or almost daily=4. The smallest potential value for all subscales is 0 and the highest 68. For the total score, the corresponding limits are 0 and 272, respectively. So the total score ranges from 0 to 272, with higher scores indicating more active aging.

In the original scale, chronbach's alpha value of the goals subscale was 0.86; functional capacity (ability) subscale was 0.91; opportunity subscale was 0.89 and activity subscale was 0.80. Chronbach's alpha value of the whole scale was 0.95.

Satisfaction with Life Scale

The SWLS was developed by Diener and others (1985). The scale was translated into Turkish by Dağlı and Baysal in 2016. The scale consists of 5 questions under one factor. Participants indicate how much they agree or disagree with each of the 5 items using a 5-point scale that ranges from 5 strongly agree to 1 strongly disagree. The scale consist of the following statements; "ıın most ways my life is close to my ideal," "the conditions of my life are excellent," "I am satisfied with my life," "so far I have gotten the important things I want in life" and "If I could live my life over, I would change almost nothing." Scale score ranges from 0 to 25, with higher scores indicating more satisfaction with life. The Cronbach Alpha internal consistency of the scale is 0.88 and test-retest reliability is 0.97. In this study, internal consistency of the scale is 0.86.

DATA ANALYSIS

IBM SPSS Statistics 23 program and Winsteps program were used to analyze the data while evaluating the study data, frequency distribution for categorical variables and descriptive statistics (mean, standard deviation, maximum, minimum) for numerical variables were given. In addition, Pearson correlation coefficient was used when the groups were distributed normally and Spearman correlation analysis was used when the groups were not distributed normally. Rasch analysis was used to evaluate the internal structure validity of the active aging scale, which was prepared to measure the implicit variable of active aging. Rasch analysis was performed for sub-dimensions and total score. In the Rash model, the fit index was calculated for each item. Pointibiserial correlation coefficient was calculated to estimate item-total correlations. Person and item separation reliabilities were calculated. In addition, material characteristic curve and test characteristic curve were formed. In order to contribute to validity, the relationship between life satisfaction scale and active aging scale scores were calculated with Spearman-Brown correlation coefficient.

RESULTS

The results of Active Aging Scale, Goals, Functional Capacity, Opportunities and Activity Sub-scales mean scores, standard deviations, language and content validity, reliability analysis, test-retest and rasch analysis, item and test characteristic curves and Active Aging Scale and Satisfaction with Life Scale Spearman-Brown Correlation Coefficient are given below.

Table 2. Active Aging Scale Items, Sub-scales and Total Score Mean and Standard Deviation Values

	Goals		Functional Capacity		Opportunities		Activity	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Items								
Crafting	2,38	1,51	2,50	1,65	1,76	1,39	1,58	1,43
Artistic pursuit	1,54	1,55	1,23	1,63	,86	1,36	,72	1,18
Events	1,96	1,51	2,17	1,73	1,44	1,45	1,20	1,30
Nature	3,23	,97	3,38	,99	2,89	1,08	2,86	1,06
Exercise	2,40	1,41	2,28	1,57	1,69	1,40	1,70	1,40
Cognitive training	2,70	1,46	2,80	1,47	2,33	1,34	2,27	1,46
Follow technology	2,02	1,58	1,88	1,64	1,54	1,53	1,63	1,64
Help others	3,18	1,04	3,34	1,05	2,73	1,13	2,73	1,21
Maintain relationships	3,01	1,10	3,28	1,08	2,62	1,09	2,54	1,18
Meet new people	2,62	1,24	2,91	1,25	2,15	1,27	1,86	1,30
Promote own matters	2,83	1,18	3,10	1,23	2,63	1,11	2,39	1,31
Societal activity	2,42	1,32	2,65	1,47	2,08	1,30	1,73	1,38
Make days interesting	2,60	1,25	2,94	1,24	2,26	1,23	2,14	1,19
Make home cozy	3,28	,97	3,49	,98	3,03	1,03	3,06	1,14
Smart appearance	3,14	1,07	3,38	,95	3,00	1,05	3,15	1,09
Economic balance	3,11	1,06	3,29	1,96	2,78	1,17	2,78	1,30
Spirituality	2,90	1,18	3,15	1,26	2,69	1,25	2,52	1,41
Total	**45,36**	**14,67**	**47,81**	**15,54**	**38,53**	**14,62**	**36,92**	**14,42**
GENERAL TOTAL	**168,63(Mean)**			**55,61(SD)**				

General total mean score of the whole scale is 168.63 (± 55.61). Also total mean score of the goals subscale is 45,36(±14,67), total mean score of the functional capacity subscale is 47,81(±15,54), total mean score of the opportunities subscale is 38,53(±14,62) and finally, total mean score of the activity subscale is 36,92(±14,42) (Table 2). The mean scores of goals and functional capacity subscale are found to be higher than the mean scores of opportunities and activity subscale. The mean scores of the participants from both the whole scale and the subscales were above 50%. It can be said that elderly individuals who participated in the study had an above-average active aging score.

Validity

Language validity

In the language validity study of the scale, Turkish translation of the scale, which was originally English, was conducted by two faculty members and a research assistant at Hacettepe University and a lecturer at Middle East Technical University. Then, these translations were brought together to search for the common aspects of

all of them, and the expressions that differed were translated into a common sentence by interviewing the translators. The Turkish form, based on expert opinion, was translated back to English. The original version of the scale was translated back to English and the academicians from Hacettepe University and Middle East Technical University were examined and it was agreed that there was no difference between the two. Translations have been evaluated considering Turkish cultural characteristics.

Content validity

A pilot study was conducted with participants aged 65 years and older (N: 20) for content validity. The clarity and comprehensibility of the items were scored with the Likert scale and the content validity of the AAS (Active Aging Scale) was determined.

Reliability analysis

Cronbach α coefficient and item total correlation analysis were used for internal consistency assessment of the scale. Cronbach's Alpha values and internal consistency coefficients of each factor were calculated for reliability analysis. Goals, functional capacity, opportunities and activity subscale were measured as (.93), (.93), (.92) and (.91). Besides, the total scale score was measured as (.97). The reliability of the scale is good value.

Test-retest

The data obtained from the pilot study conducted with 25 people were reviewed by the expert committee that the items were comprehensible, and the Turkish version of the AAS (Active Aging Scale) was applied to the group of 25 people. The data collection time for each survey was approximately 12 minutes. Test-retest was applied to determine the reliability of the scale and the scale was administered to the same individuals for the second time with a 3-week interval. Test-retest correlations were determined by Pearson correlation analysis. The correlation coefficient was .90 for the goals subscale, .90 for the functional capacity subscale, .91 for the opportunities subscale, .92 for the activity subscale and .91 for the overall scale.

Rasch analysis

Rasch model was used to determine the validity and reliability of the scale. The Rasch model approaches the concept of reliability from a different perspective than classical theory. Instead of reliability measures related to the distribution of talent in classical theory, the precision of measures obtained is taken into consideration. The accuracy of each skill estimate is expressed by the standard error associated with this estimate. The magnitude of this error measure depends on the number of items in the tests and the compatibility of the item difficulties with the skill level in the group in which the application is performed (Wright and Panchapakesan, 1969).

In the Rasch model, the infit and outfit values of each item in each subscale are considered to be between 0.5 and 1.5, and it is stated that the values above 2 do not comply with the model (Wright and Linacre, 1994; de Ayala, 2009). In addition, to determine the item-total correlations, the calculated Pbc values should be higher than 0.20 and the reliability coefficient of the individual separation should be 0.8 and above (Tennant and Conaghan, 2007; Rantanen and others, 2018a).

In the light of this information, each subscale of the Active Aging Scale was prepared according to Goals (Table. 3), Functional Capacity (Table .4), Opportunities (Table. 5) and Activity (Table. 6). The results of rasch analysis according to infit values, person separation reliability and substance separation reliability scores are shown below.

Table 3. Goals Subscale of Active Aging Scale Rasch Analysis

	Complete Scale Statistics				Subscale Statistics			
Item	Estimate	SE	Infit	Pbc	Estimate	SE	Infit	Pbc
Goals								
Crafting	0.313	0.075	1.739	0.662	0.529	0.079	1.842	0.653
Artistic pursuit	0.918	0.073	1.422	0.614	1.216	0.078	1.390	0.595
Events	0.639	0.074	1.048	0.644	0.898	0.079	1.065	0.634
Nature	-1.083	0.112	1.079	0.592	-1.055	0.116	0.984	0.603
Exercise	0.221	0.079	0.983	0.652	0.440	0.083	0.870	0.648
Cognitive training	0.037	0.079	1.207	0.668	0.225	0.082	1.231	0.659
Follow technology	0.578	0.072	1.194	0.651	0.825	0.076	1.135	0.638
Help others	-0.809	0.106	0.827	0.611	-0.678	0.110	0.845	0.618
Maintain relationships	-0.649	0.099	0.761	0.620	-0.510	0.103	0.712	0.627
Meet new people	-0.172	0.088	1.063	0.633	0.025	0.092	1.014	0.637
Promote own matters	-0.264	0.094	0.839	0.635	-0.074	0.097	0.802	0.638
Societal activity	0.152	0.083	0.869	0.641	0.374	0.087	0.819	0.642
Make days interesting	-0.117	0.087	0.931	0.634	0.085	0.091	0.852	0.638
Make home cozy	-1.104	0.114	0.767	0.597	-1.076	0.118	0.778	0.606
Smart appearance	-0.693	0.104	0.973	0.618	-0.543	0.107	0.889	0.623
Economic balance	-0.662	0.104	0.994	0.617	-0.509	0.108	0.926	0.622
Spirituality	-0.353	0.094	1.082	0.635	-0.173	0.097	1.089	0.638
Subscale reliability							0.93	
Person separation reliability							0.86	
Item separation reliability							0.98	

According to Table 3, Model-item fit was found to be sufficient as the infit values of each item in the scale were between 0.5 and 1.5. Goals subscale was found to be high in person separation index (PSI = 0.86) and item separation index (ISI = 0.98). Besides, if the Pbc values calculated to determine item-total correlations are less than 0.20, it shows low item discrimination. The Pbc values of the scale were higher than 0.20. Therefore, the separation power of the items in the scale is considered sufficient.

Table 4. Functional Capacity Subscale of Active Aging Scale Rasch Analysis

	Complete Scale Statistics				Subscale Statistics			
Item	Estimate	SE	Infit	Pbc	Estimate	SE	Infit	Pbc
Functional capacity								
Crafting	0.206	0.071	1.492	0.673	0.531	0.076	1.497	0.676
Artistic pursuit	1.101	0.071	1.623	0.588	1.554	0.076	1.680	0.524
Events	0.456	0.067	1.145	0.665	0.816	0.073	1.161	0.654
Nature	-1.375	0.110	1.036	0.599	-0.476	0.116	0.960	0.627
Exercise	0.404	0.072	1.110	0.663	0.754	0.078	1.145	0.664
Cognitive training	-0.017	0.079	1.159	0.669	0.277	0.083	1.081	0.682
Follow technology	0.662	0.070	1.292	0.645	1.055	0.075	1.471	0.624
Help others	-1.109	0.107	0.873	0.613	-0.999	0.112	0.775	0.639
Maintain relationships	-0.949	0.104	0.754	0.618	-0.762	0.109	0.636	0.643
Meet new people	-0.411	0.089	1.083	0.642	-0.141	0.094	0.963	0.660
Promote own matters	-0.487	0.093	0.834	0.644	-0.234	0.098	0.674	0.665
Societal activity	0.048	0.077	1.023	0.666	0.357	0.082	0.914	0.677
Make days interesting	-0.391	0.090	0.825	0.643	-0.120	0.095	0.783	0.662
Make home cozy	-1.070	0.121	0.695	0.598	-0.875	0.125	0.679	0.617
Smart a ppearance	-1.191	0.117	0.757	0.593	-1.077	0.122	0.749	0.618
Economic balance	-0.622	0.095	1.065	0.641	-0.382	0.100	0.970	0.663
Spirituality	-0.528	0.091	1.137	0.647	-0.278	0.096	1.044	0.668
					Subscale reliability			0.93
					Person separation reliability			0.86
					Item separation reliability			0.98

According to Table 4, Model-item fit was found to be sufficient as the infit values of each item in the scale were between 0.5 and 1.5. Functional capacity subscale was found to be high in person separation index (PSI = 0.86) and item separation index (ISI = 0.98). The Pbc values of the scale were higher than 0.20. Therefore, the separation power of the items in the scale is considered sufficient.

Table 5. Opportunities Subscale of Active Aging Scale Rasch Analysis

	Complete Scale Statistics				Subscale Statistics			
Item	Estimate	SE	Infit	Pbc	Estimate	SE	Infit	Pbc
Opportunities								
Crafting	0.844	0.078	1.530	0.620	0.792	0.085	1.878	0.647
Artistic pursuit	1.495	0.081	1.516	0.526	1.558	0.088	1.609	0.544
Events	1.067	0.076	0.996	0.601	1.057	0.082	1.115	0.622
Nature	-0.639	0.099	0.951	0.609	-1.031	0.108	1.071	0.639
Exercise	0.838	0.078	1.010	0.614	0.791	0.084	1.105	0.641
Cognitive training	0.304	0.082	0.885	0.642	0.149	0.090	1.006	0.668
Follow technology	0.986	0.073	1.160	0.617	0.962	0.079	1.269	0.632
Help others	-0.295	0.095	0.878	0.620	-0.593	0.104	0.822	0.649

Maintain relationships	-0.344	0.097	0.698	0.601	-0.655	0.105	0.649	0.635
Meet new people	0.326	0.084	0.788	0.619	0.186	0.091	0.789	0.651
Promote own matters	-0.188	0.096	0.717	0.614	-0.464	0.105	0.830	0.646
Societal activity	0.471	0.083	0.777	0.624	0.354	0.090	0.834	0.656
Make days interesting	0.202	0.087	0.855	0.617	0.033	0.094	0.843	0.650
Make home cozy	-0.728	0.105	0.712	0.607	-1.156	0.116	0.676	0.633
Smart appearance	-0.717	0.103	0.779	0.608	-1.136	0.112	0.842	0.635
Economic balance	-0.192	0.094	0.867	0.633	-0.474	0.103	0.987	0.657
Spirituality	-0.125	0.088	0.892	0.640	-0.373	0.096	0.998	0.664
					Subscale reliability			0.92
					Person separation reliability			0.92
					Item separation reliability			0.98

According to Table 5, Model-item fit was found to be sufficient as the infit values of each item in the scale were between 0.5 and 1.5. Opportunities subscale was found to be high in person separation index (PSI = 0.92) and item separation index (ISI = 0.98). The Pbc values of the scale were higher than 0.20. Therefore, the separation power of the items in the scale is considered sufficient.

Table 6. Activity Subscale of Active Aging Scale Rasch Analysis

	Complete Scale Statistics				Subscale Statistics			
Item	Estimate	SE	Infit	Pbc	Estimate	SE	Infit	Pbc
Activity								
Crafting	0.935	0.077	1.725	0.609	0.701	0.078	1.779	0.597
Artistic pursuit	1.770	0.090	1.627	0.495	1.562	0.090	1.531	0.485
Events	1.306	0.082	1.150	0.565	1.084	0.084	1.087	0.555
Nature	-0.700	0.100	1.067	0.604	-1.176	0.104	1.115	0.585
Exercise	0.857	0.078	1.039	0.616	0.618	0.080	1.028	0.604
Cognitive training	0.363	0.076	1.074	0.652	0.098	0.079	1.113	0.633
Follow technology	0.890	0.070	1.331	0.629	0.661	0.071	1.436	0.613
Help others	-0.432	0.089	0.845	0.626	-0.791	0.092	0.821	0.608
Maintain relationships	-0.218	0.090	0.693	0.616	-0.552	0.093	0.613	0.601
Meet new people	0.558	0.083	0.863	0.604	0.303	0.084	0.790	0.593
Promote own matters	0.106	0.083	0.838	0.635	-0.182	0.086	0.819	0.618
Societal activity	0.722	0.079	0.832	0.608	0.479	0.080	0.773	0.596
Make days interesting	0.319	0.089	0.827	0.607	0.039	0.091	0.729	0.595
Make home cozy	-0.561	0.097	0.803	0.630	-0.923	0.101	0.773	0.599
Smart appearance	-0.833	0.101	0.829	0.619	-1.256	0.106	0.873	0.589
Economic balance	-0.201	0.086	0.913	0.648	-0.514	0.089	0.964	0.622
Spirituality	0.131	0.080	1.032	0.657	-0.151	0.082	0.928	0.633
					Subscale reliability		0.91	
					Person separation reliability		0.91	
					Item separation reliability		0.99	
Complete scale alpha reliability		0.98						
Person separation reliability		0.97						
Item separation reliability		0.98						

According to Table 6, Model-item fit was found to be sufficient as the infit values of each item in the scale were between 0.5 and 1.5. Activity subscale was found to be high in person separation index (PSI = 0.91) and item separation index (ISI = 0.91). The Pbc values of the scale were higher than 0.20. Therefore, the separation power of the items in the scale is considered sufficient.

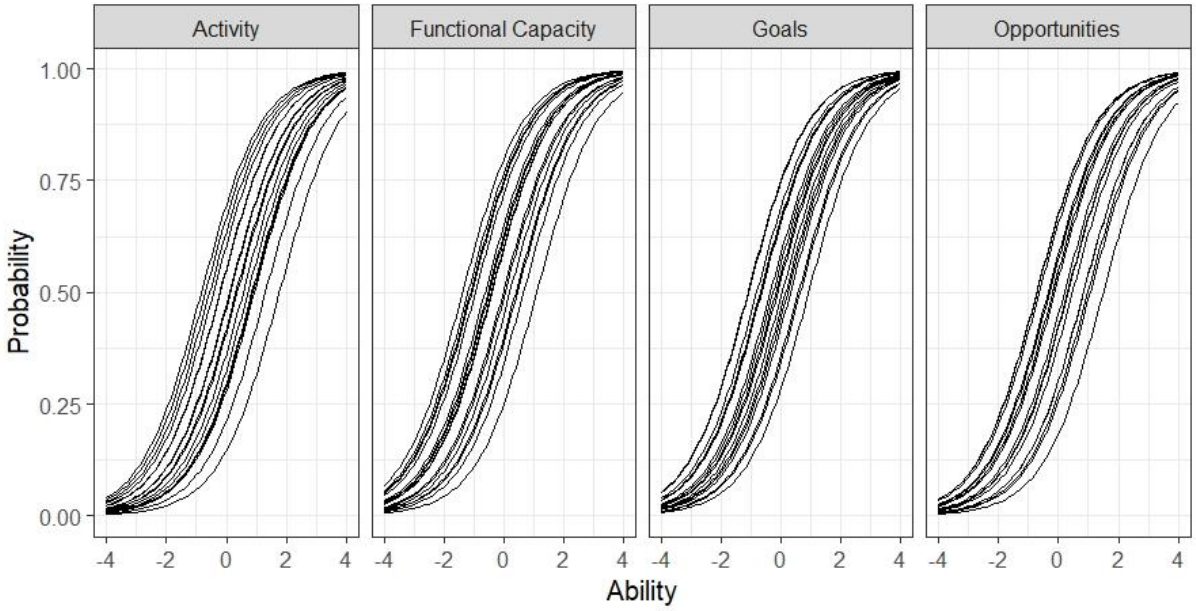

Figure 2. Item Characteristic Curves

From the overlap of some according to the item characteristic curves, it appears that these items measure similar skill levels. In general, it was determined that the items in each subscale were ordered from easy to difficult and they measured the logistic measurement range -4 and 4 adequately (Figure 2).

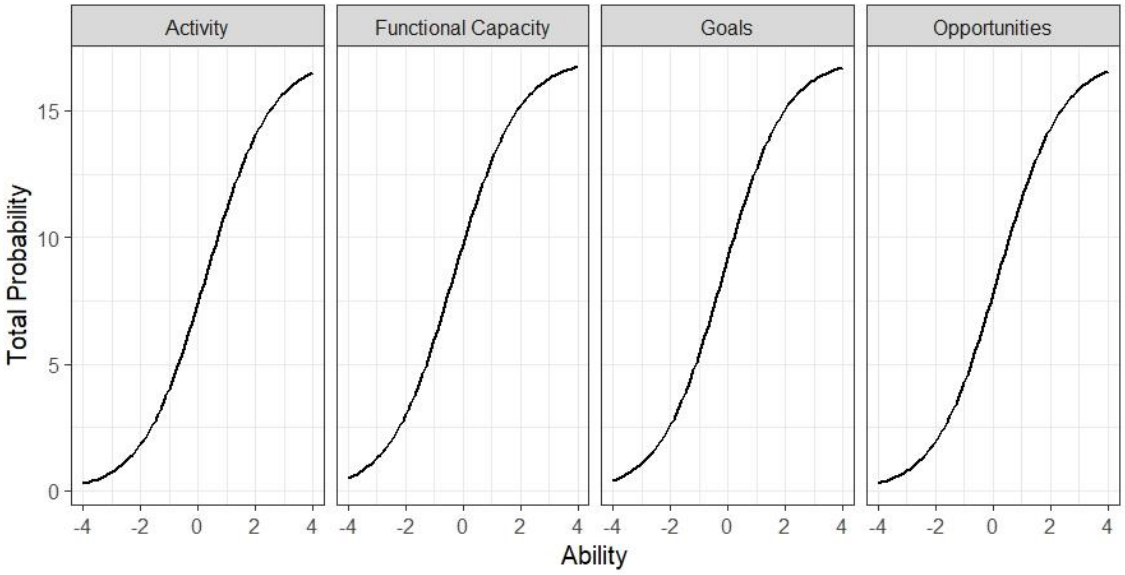

Figure 3. Test Characteristic Curves

The test characteristic curve can be interpreted as the sum of the curves obtained from each item. Accordingly, it is seen that the subscales measure similar ranges and the total difficulties are close to each other (Figure 3).

Table 7. Active Aging Scale and Satisfaction with Life Scale Spearman-Brown Correlation Coefficient

		Goals	Functional capacity	Opportunities	Activity	Total
Life satisfaction	R	0.292	0.332	0.314	0.372	0.355
	P	0.000***	0.000***	0.000***	0.000***	0.000***

**:p<0,05 **:p<0,01 ***:p<0,001*

The ultimate goal of active aging is to improve the quality of life in the elderly (WHO, 2002: 55, Boudiny, 2013: 13, Walker and Maltby, 2012: 28). Life satisfaction of elderly people has a positive effect on quality of life (Aydıner Boylu and Günay, 2017: 62). In other words, elderly people with high life satisfaction will have high quality of life. From this point of view, there is a positive relationship between active aging and life satisfaction of the elderly.

Table 7 shows the correlations between total scale, subscales and scores from life satisfaction questions. As a result of the Pearson correlation test, there was a statistically significant positive correlation between life satisfaction and active aging scale goals, functional capacity, opportunities and activity sub-dimensions and total scale score (p<0.05). In addition, the high correlations between the subscales indicate that aggregating these scales under the total scale of active living is significant and supports the validity of the scale. According to this result, it can be said that as the active aging levels of the elderly increase, life satisfaction increases.

CONCLUSION and DISCUSSION

As a result of the statistical analyzes, the model-item fit of the items in the objectives, functional capacity, opportunities and activity subscales of the Active Aging Scale, which measures the individual's active aging level, was found to be sufficient. When all the scale questions were examined together, it was found that the reliability of person separation and reliability of item separation were high. In addition, the KR reliability coefficient of the scale was found to be 0.98. According to these data, total reliability was found to be high. In addition, when individual subscales were examined one by one, it was determined that reliability of item separation, reliability of person separation, and subscale reliability values were similarly high and the reliability of the subscales was found to be high. In the light of these results, it was concluded that the scale showed adequate adaptation to Rasch model and the total scale score consisted of four (4) subscales including one-dimensional active aging implicit structure.

In the literature review, there was no research on the application of Active Aging Scale (UJACAS) developed by Rantanen and others (2018a). As a result, it was determined by our study that the Active Aging Scale (AAS) was a valid and reliable scale for the Turkish population. It is recommended that this scale should be applied to elderly people with different socio-economic and cultural characteristics for future studies.

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AKTİF YAŞLANMA ÖLÇEĞİ (AYÖ)

Açıklama:

Aşağıda yer alan 'Aktif Yaşlanma' anketin amacı, belirli günlük aktiviteleri yapmakla ilgilenip ilgilenmediğinizi ve bunları yapmak için hangi olanaklara sahip olduğunuzu araştırmaktır. Ankette dört farklı bakış açısıyla 17 farklı aktivite sorusu sorulmaktadır. Bu dört farklı bakış açısı aşağıdaki gibidir; 1)Amaçlar(Yapma isteği), 2)Fonksiyonel Kapasite(Yapabilme), 3)Fırsatlar(Yapma fırsatı) ve 4)Aktivite(Yapma sıklığı)

Lütfen aşağıda yer alan 17 farklı aktiviteyi dört farklı bakış açısıyla değerlendiriniz. (Soruları cevaplarken, yaşamınızdaki son 1 ayı dikkate alınız.) Bunlar;

- Bu faaliyetleri ne derecede yapmak istediniz?
- Bu faaliyetleri yaparken zorlandınız mı?
- Bu faaliyetleri yapma fırsatı buldunuz mu?
- Bu faaliyetleri ne sıklıkla yaptınız?

AMAÇLAR (Yapma İsteği) Son bir ayda aşağıda yer alan faaliyetleri yapmayı ne kadar istediniz?	**Çok kuvvetli**	**Kuvvetli**	**Bir dereceye kadar**	**Biraz**	**Hiç**
1. El işçiliği, tadilat, tamirat gibi el becerisi gerektiren işler	**4**	**3**	**2**	**1**	**0**
2. Resim, müzik ya da müzik aleti çalmak veya yazmak ve diğer sanatsal meşguliyetler	**4**	**3**	**2**	**1**	**0**
3. Çalışarak ya da kulüpler veya dernekler aracılığıyla çeşitli etkinliklerde ve aktivitelerde yer alma	**4**	**3**	**2**	**1**	**0**
4. Dışarı çıkma ve doğanın keyfini çıkartma	**4**	**3**	**2**	**1**	**0**
5. Fiziksel olarak formda kalmak için spor yapma	**4**	**3**	**2**	**1**	**0**
6. Aklımı ya da hafızamı çalıştırmak için gayret gösterme	**4**	**3**	**2**	**1**	**0**
7. Bilgisayar ya da tablet kullanma	**4**	**3**	**2**	**1**	**0**
8. Bana yakın olan veya diğer insanlara yardım etme veya destek olma	**4**	**3**	**2**	**1**	**0**
9. Sosyal ilişkilerimi sürdürmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
10. Yeni kişilerle tanışmak için harekete geçme	**4**	**3**	**2**	**1**	**0**
11. Kendi hayatımla ilgili ileriye yönelik işler için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
12. Toplumsal ya da kamusal olayları desteklemek için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
13. Günlerimi daha ilginç ve zevkli hale getirmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
14. Evimin huzuru arttırma ve ya sürdürme	**4**	**3**	**2**	**1**	**0**
15. Dış görünüşüme dikkat etme	**4**	**3**	**2**	**1**	**0**
16. Mali işlerimin düzenli olmasını sağlama	**4**	**3**	**2**	**1**	**0**
17. İnancım ve dünya görüşüme göre ileride olabilecek sorunlara karşı harekete geçme	**4**	**3**	**2**	**1**	**0**

FONKSİYONEL KAPASİTE (Yapabilme) Sağlık durumunuzu ve yapabilme kapasitenizi göz önünde bulundurduğunuzda, son bir ayda aşağıda yer alan faaliyetleri yaparken zorlandınız mı?	**Hiç zorlanmadım**	**Biraz zorlandım**	**Çok zorlandım**	**Birinden yardım almadan yapamadım**	**Birinden yardım alsam bile yapadım**
1. El işçiliği, tadilat, tamirat gibi el becerisi gerektiren işler	**4**	**3**	**2**	**1**	**0**
2. Resim, müzik ya da müzik aleti çalmak veya yazmak ve diğer sanatsal meşguliyetler	**4**	**3**	**2**	**1**	**0**
3. Çalışarak ya da kulüpler veya dernekler aracılığıyla çeşitli etkinliklerde ve aktivitelerde yer alma	**4**	**3**	**2**	**1**	**0**
4. Dışarı çıkma ve doğanın keyfini çıkartma	**4**	**3**	**2**	**1**	**0**

5.	Fiziksel olarak formda kalmak için spor yapma	**4**	**3**	**2**	**1**	**0**
6.	Aklımı ya da hafızamı çalıştırmak için gayret gösterme	**4**	**3**	**2**	**1**	**0**
7.	Bilgisayar ya da tablet kullanma	**4**	**3**	**2**	**1**	**0**
8.	Bana yakın olan veya diğer insanlara yardım etme veya destek olma	**4**	**3**	**2**	**1**	**0**
9.	Sosyal ilişkilerimi sürdürmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
10.	Yeni kişilerle tanışmak için harekete geçme	**4**	**3**	**2**	**1**	**0**
11.	Kendi hayatımla ilgili ileriye yönelik işler için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
12.	Toplumsal ya da kamusal olayları desteklemek için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
13.	Günlerimi daha ilginç ve zevkli hale getirmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
14.	Evimin huzuru arttırma ve ya sürdürme	**4**	**3**	**2**	**1**	**0**
15.	Dış görünüşüme dikkat etme	**4**	**3**	**2**	**1**	**0**
16.	Mali işlerimin düzenli olmasını sağlama	**4**	**3**	**2**	**1**	**0**
17.	İnancım ve dünya görüşüme göre ileride olabilecek sorunlara karşı harekete geçme	**4**	**3**	**2**	**1**	**0**

FIRSATLAR (Yapma Fırsatı) Hayatınıza genel olarak baktığınızda, son bir ayda aşağıda yer alan ifadeleri ne derece yapabilme fırsatı buldunuz?		**Çok fazla**	**Oldukça**	**Orta**	**Kısmen**	**Hiç**
1.	El işçiliği, tadilat, tamirat gibi el becerisi gerektiren işler	**4**	**3**	**2**	**1**	**0**
2.	Resim, müzik ya da müzik aleti çalmak veya yazmak ve diğer sanatsal meşguliyetler	**4**	**3**	**2**	**1**	**0**
3.	Çalışarak ya da kulüpler veya dernekler aracılığıyla çeşitli etkinliklerde ve aktivitelerde yer alma	**4**	**3**	**2**	**1**	**0**
4.	Dışarı çıkma ve doğanın keyfini çıkartma	**4**	**3**	**2**	**1**	**0**
5.	Fiziksel olarak formda kalmak için spor yapma	**4**	**3**	**2**	**1**	**0**
6.	Aklımı ya da hafızamı çalıştırmak için gayret gösterme	**4**	**3**	**2**	**1**	**0**
7.	Bilgisayar ya da tablet kullanma	**4**	**3**	**2**	**1**	**0**
8.	Bana yakın olan veya diğer insanlara yardım etme veya deste olma	**4**	**3**	**2**	**1**	**0**
9.	Sosyal ilişkilerimi sürdürmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
10.	Yeni kişilerle tanışmak için harekete geçme	**4**	**3**	**2**	**1**	**0**
11.	Kendi hayatımla ilgili ileriye yönelik işler için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
12.	Toplumsal ya da kamusal olayları desteklemek için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
13.	Günlerimi daha ilginç ve zevkli hale getirmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
14.	Evimin huzuru arttırma ve ya sürdürme	**4**	**3**	**2**	**1**	**0**
15.	Dış görünüşüme dikkat etme	**4**	**3**	**2**	**1**	**0**
16.	Mali işlerimin düzenli olmasını sağlama	**4**	**3**	**2**	**1**	**0**
17.	İnancım ve dünya görüşüme göre ileride olabilecek sorunlara karşı harekete geçme	**4**	**3**	**2**	**1**	**0**

AKTİVİTE (Yapma Sıklığı) Son bir ayda aşağıda yer alan ifadeleri içerisinde ne sıklıkta yaptınız?		**Her gün ya da neredeyse hergün**	**Haftada 2-4 defa**	**Yaklaşık haftada bir**	**Haftada birden daha az**	**Hiç**
1.	El işçiliği, tadilat, tamirat gibi el becerisi gerektiren işler	**4**	**3**	**2**	**1**	**0**
2.	Resim, müzik ya da müzik aleti çalmak veya yazmak ve diğer sanatsal meşguliyetler	**4**	**3**	**2**	**1**	**0**
3.	Çalışarak ya da kulüpler veya dernekler aracılığıyla çeşitli etkinliklerde ve aktivitelerde yer alma	**4**	**3**	**2**	**1**	**0**
4.	Dışarı çıkma ve doğanın keyfini çıkartma	**4**	**3**	**2**	**1**	**0**

5.	Fiziksel olarak formda kalmak için spor yapma	**4**	**3**	**2**	**1**	**0**
6.	Aklımı ya da hafızamı çalıştırmak için gayret gösterme	**4**	**3**	**2**	**1**	**0**
7.	Bilgisayar ya da tablet kullanma	**4**	**3**	**2**	**1**	**0**
8.	Bana yakın olan veya diğer insanlara yardım etme veya destek olma	**4**	**3**	**2**	**1**	**0**
9.	Sosyal ilişkilerimi sürdürmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
10.	Yeni kişilerle tanışmak için harekete geçme	**4**	**3**	**2**	**1**	**0**
11.	Kendi hayatımla ilgili ileriye yönelik işler için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
12.	Toplumsal ya da kamusal olayları desteklemek için sorumluluk alma	**4**	**3**	**2**	**1**	**0**
13.	Günlerimi daha ilginç ve zevkli hale getirmek için bir şeyler yapma	**4**	**3**	**2**	**1**	**0**
14.	Evimin huzurunu arttırma ve ya sürdürme	**4**	**3**	**2**	**1**	**0**
15.	Dış görünüşüme dikkat etme	**4**	**3**	**2**	**1**	**0**
16.	Mali işlerimin düzenli olmasını sağlama	**4**	**3**	**2**	**1**	**0**
17.	İnancım ve dünya görüşüme göre ileride olabilecek sorunlara karşı harekete geçme	**4**	**3**	**2**	**1**	**0**