



Investigating Validity and Reliability and Factor Analysis of Webster's Wisdom Questionnaire in Iran

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Abstract

Webster's Wisdom Questionnaire is a well-known self-assessment scale, which can cover a wide range of future wisdom studies. This research was conducted with the aim to examine the questionnaire psychometrics (reliability, validity, and factor analysis) and to evaluate the relationship between wisdom, age and gender. This questionnaire contains 40 questions assessing the people's wisdom. In a cross-sectional study, 395 (293 males and 102 females) of Sanandaj city, selected through randomized cluster sampling, were assessed using the Questionnaire. Data were analyzed using correlation coefficient, factor analysis and t-test. Using factor analysis, four factors of the proper use of experiences, emotional regulation, reflection, and humor were extracted. To assess the reliability of this questionnaire, Cronbach's alpha and Pearson correlation were used. The results revealed that this questionnaire had good convergent validity. In addition, the comparison of these factors between males and females indicated that females significantly obtained higher score than males in two factors of using the experiences and emotional regulation. Moreover, the high correlation of factors with the total score of the questionnaire and poor correlation of the factors with each other reflect the adequacy and efficiency of this questionnaire to be used by researchers, experts, and psychologists in Iran.

Keywords: Webster's Wisdom Questionnaire, Self-assessment, Factor analysis, Validity, reliability

Introduction

According to Sternberg (1990), "wisdom as psychological structure is elusive and unreachable". Over the last decade, the subject of wisdom has drawn the attention of many people, especially growth and cognitive psychologists. The definition presented for wisdom may vary from one person to another one, but based on the definitions presented by psychologists over the last decades, wisdom definitions are generally classified into four groups: 1-wisdom as a combination of personality traits or abilities and capacities, 2-wisdom as the positive outcomes of human growth, 3-wisdom as a collective

system of practical knowledge, and 4- wisdom as a process of rational prosperity emerging in the real life (Yang, 2008). In all of these definitions, wisdom is clearly distinguished from social intelligence, maturity or creativity. The wisdom is an exceptional level of human performance, which is related to the supremacy and aspirations of human progress and development (Cacioppo & Gardner, 1999; Frederickson & Branigan, 2005). The term "wise old person" is one of the concepts known in Iranian culture. It implies that wisdom and wise person can be found in old ages. In the wisdom literature, age as a predictor of wisdom is controversial issue. Some researchers have argued that wisdom

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generally increases over the years and by increasing the age (Baltes, Smith, & Staudinger, 1992; Clayton & Birren, 1980; Sternberg, 1986; Takahashi & Overton, 2005), while some researchers have argued that wisdom does not have a definite relationship with age (Jordan, 2005) and it even decreases by increasing the age (Meacham, 1990).

The most comprehensive view on the relationship between age and wisdom belongs to Sternberg. Sternberg (2005) presented five general views or hypothesized models on the relationship between age and wisdom. Based on the first model, wisdom grows after a spiritual awakening or resurrection in old age. In the Erikson's Growth Model (Erikson, 1963/1982; Erikson et al., 1986), the wisdom is a virtue, which is the result of the successful solving of the last crisis of growth and totality to disappointment. It includes reconciliation with one's past and acceptance of the life's mortality. Based on the second view, the wisdom, like fluid intelligence, or the ability to process new information and the use of knowledge in new possible ways, might increase during adolescence and youth and remain relatively stable in the early and middle of adulthood stages, and decrease at the end of adulthood and with approaching the old ages. The third view is that wisdom may follow the crystallized intelligence path. The crystallized intelligence involves accumulated knowledge and skills, which continually increases with increasing the age up to the end of life, unless the disease prevents it. Based on the fourth view, the wisdom may increase until the middle or late adulthood, close to aging, similar to crystalized intelligence, but it may decrease in the last years of life, due to reduced fluid intelligence. In general, wisdom decreases in old age. Finally, based on the fifth view, wisdom may continuously decrease with increasing age due to ups and downs and lack of balance between certainty and uncertainty and it causes self-orientation and loss of meaning in life (Meacham, 1990).

Except for the first view, considering the wisdom as the result of spiritual awakening in old age, other models assume that wisdom begins to grow in the early years of life. Smith and Baltes (1990; Robinson, 1990) argued that the youths who act and perform beyond their intellectual age are evidence on non-linear relationship between age and wisdom. Richardson and Pasupathi (2005) argued that in adolescence and youth periods, the wisdom increases due to the personality and intellectual development. This research examined this relationship. With regard to the relationship between wisdom and gender, wisdom is not limited to males or females. Yang (1964, p. 196) described the wisdom difference in males and females in this way: "from the women perspective, a wise woman is usually perceived as a woman who is

superior in terms of appearance, spiritual personality, mother of the earth, or the goddess of nature, or love. However, from men perspective, a superior man is perceived as a creative and wise old man (quoted by Birren & Swenson, 2005, p. 13). The most comprehensive model with regard to gender and wisdom has been provided by Orwoll and Achenbaum (1993). The model proposed by them involves intrapersonal, interpersonal, and transpersonal experiences in three dimensions of cognition, emotion, and effort. The differences results from the difference in the socialization of males and females. They believe that males may have advantages in the cognitive domain, while females are superior in the intrapersonal domain.

Orwoll and Achenbaum (1993) also concluded that wisdom is not associated with gender, but males and females may show wisdom in different ways. Very limited studies have been conducted to examine the gender differences in the domain of wisdom. The studies conducted by Ardlet (2009) on gender differences in responding to self-assessment questionnaire have confirmed the Orwoll and Achenbaum model. They have shown that men, especially older men, have an advantage in cognitive dimension of the wisdom, while women are wiser in intrapersonal indices. However, there was no difference between the 25 percent of the wisdom scores in terms of gender. Glück research (2009) on gender differences in wisdom level also provided weak evidence to confirm this relationship.

Despite different views on the concept of wisdom and its relationship with age and gender, many researchers of wisdom agree that the wisdom is multidimensional and some researchers consider it as the integration of knowledge, personality, emotion and virtue (Ardlet, 2003), and some of them have referred to combination of cognitive, reflective, and emotional features (Birren & Fisher, 1990; Brugman, 2000; Chandler, 1991; Clayton & Birren, 1980; Kunzmann, 2004; Randall & Kenyon, 2001). Although there is no global agreement on the wisdom dimensions, a contemporary consensus has achieved from its multi-dimension nature, including experience, emotional regulation, reminiscence and reflection, openness, and humor (Jest et al., 2010). The advantages related to more understanding on the concept of wisdom and the desire to achieve a single definition of wisdom increasingly in fields such as clinical psychology and psychotherapy (Germer & Siegel, 2012), decision making (Yanio & Chuasen-Hillel, 2012), leadership (Kilberg, 2012) and education (Sternberg, 2010) have led to the revival of empirical studies on this concept.

Most of the studies conducted so far have more conceptual and theoretical approach and they have put less emphasis on empirical measurements. The studies

which are based on empirical measurements have been mostly conducted by Baltes et al. whose base of assessment of the wisdom are mainly cognitive decision making and performance-based scales, such as Berlin wisdom paradigm (Baltes & Staudinger, 2000) and Berman wisdom paradigm (Mickler & Staudinger, 2008). However, little effort has been made to develop and validate self-assessment scales. In this research, a well-known self-assessment wisdom scale (Self-assessment wisdom Scale (SAWS), which can cover a wide range of future studies, is introduced and validated with Iranian population, and it is analyzed conceptually and experimentally. In this research, the questionnaire validity, reliability, and its factor structure with Iranian population as well as the relationship between wisdom, age and gender are also examined. This tool was developed by Webster in 2003. It measures the five dimensions of wisdom, which include emotional regulation, reminiscence and reflection, openness, and humor, and growth through challenging experiences, each of which would be described below.

Experience

Wisdom cannot develop in a vacuum, but it develops during the life, hard times and ups and downs of daily life. Successfully pasting through critical stages, positive solutions to critical problems and adaptability in stressful conditions and settings test the wisdom. This can justify the relationship between wisdom and age to some extent. Older person gains more experience. It can explain the relatively inconclusive and ambiguous findings about age and wisdom (Meacham, 1990; Staudinger, 1999). Hence, in line with Cramer's views (1990), the sum of general experiences does not lead to higher wisdom in person, but the challenging experiences which require some degree of deep reflection lead to higher wisdom. Wink and Helson (1997) have recently provided several experimental supports for this issue. For example, women who experienced divorce had wisdom, in comparison to women who did not experience this difficult event, showed higher wisdom. Hence, from this perspective, we can see how an 76 years of old, who has had a very comfortable, safe and successful life, may have gained more general experience than a young adult, but may have a lower wisdom than a 23 years of old man who has struggled to survive in abnormal conditions. As Noam (1996) stated, "people who have experienced a difficult life have greater wisdom (p. 139).

Emotional regulation

Many researchers (Ardlet, 1997; Clayton & Birren, 1980; Cramer, 1990; Holliday & Chandler, 1986;

Orwoll & Perlmutter, 1990) consider emotional regulation as key element of wisdom. It is believed that emotional alignment and proper expression are key elements in one's complete performance and mental health (Magee & McFadden, 1996; Rogers, 1961). As with the related concepts, such as emotional intelligence (Salovey & Meyer, 1990) and intrapersonal intelligence (Gardner, 1983), the emotional dimension of wisdom involves sever sensitivity to the large, delicate differences and a complex combination of the wide range of human emotion. Identifying, accepting, and using emotions constructively are sign of wisdom. One who is only able to differentiate between being "nervous" and being "very nervous" in dealing with end of a relationship, has lower wisdom than a person who is able to identify and differentiate mixed feelings and use this knowledge to solve this problem.

Reminiscence and reflection

In the context of both contemporary philosophical and ancient interpretations of wisdom, the philosophers' saying that "know yourself" is often referred (Robinson, 1990). Reflective reminiscence in one's past and the present life provides us with a valuable set of psychological functions, including the formation of identity and protection, self-recognition, problem solving, and adaptive behavior. Kramer (1990) saw the review of life as one of the wisdom functions. Baltes et al (1992) argued that wise people should be "experts" in reviewing of life. Such views indicate a history-effect sequence, whereby the initial emerging of the wisdom enables the person to review life effectively. Tendency to review a person's life is a prerequisite for the growth of wisdom (Randall & Kenyon, 2002). As many authors claim, these two factors are mutually dependent and grow in a dynamic and mutual way. The review of life is recognized as a mechanism allowing its integrity to grow in later years and the positive role of memory reminiscence and its relation to wisdom to be recognized (Butler, 1995; Erikson, 1963). In the short term, examining one's life provides opportunities to identify the strengths and weaknesses. Identifying these cases will allow us to strengthen the strengths and improve our weaknesses. It also allows us to discover the meaning of our lives, which is a philosophical and affective task and function.

Openness

Rigid and inflexible response to the needs and problems of life reflects that the person is not wise. As many of our important problems and needs have diverse aspects, openness to different views and different information and potential solutions and strategies leads to a better

outcome of the wise person's efforts to overcome the problems. Staudinger, Lopez, and Baltes (1997) have recently found that openness to experiences is one of the most powerful predictors of the wisdom. Other researchers also consider openness as important dimension of wisdom (Arlin, 1990; Wink & Helson, 1997). Examining the probabilities, accepting opposing views, and considering new approaches are used in investigating the complex and complicated issues form a set of skills to identify a wise person. In personality studies, openness to experience is one of the "five factors" of personality and is associated with the thought structure reflecting the aspects of wisdom (Digman, 1990; McCrae & Costa, 1980). Openness is recognized as an essential element in the structure of positive psychology, such as mental health, through which one can predict that a person has a higher score among wise men (Ryff & Keyes, 1995).

Humor

Humor is one of the aspects of the wisdom, which less attention has been paid to it. Although it has been recognized by some researchers (Taranto, 1989) as an important element of wisdom, there is no systematic procedure to examine it. Various reports of the positive benefits of humor, such as the research conducted by Vaillant (1977) on adult defense mechanisms, show that a wise person recognizes humor, enjoys it, and uses it in various contexts for various purposes. Erickson (quoted by Friedman, 1999) said that: "I cannot imagine a wise and elderly person who cannot laugh. The world is full of ridiculous contradictions" (p. 468). Frecknall (1994) stated that humor is often "a source of proximity to humans and strengthen and enrich the experience and it gives a type of perspective to life". Erickson's (1963) defined humor in this way: the ability to play with rare moments and situations and the reckless reflection on the strange subjects and traditions and customs, through which one can achieve self-realization. As all experiences are not related to wisdom, different types of humor are not related to wisdom: mocking, annoying, and sarcastic humor may have their status, but they are not considered in the domain of wisdom. However, metaphoric and prevaricate speaking and community-friendly goals are examples of the types of humor, considered within the wisdom domain.

Method

Participants

The research sample included 395 people selected from Sanandaj city. A part of these people included high school students and the university students who were randomly selected using a multi-stage cluster sampling

method and another part of them included adults, tested in a convenient sampling form. Out of total number of them, 293 were female and 102 were male.

Instruments

The self-assessment wisdom scale SAWS (Webster, 2003, 2007) views wisdom as a combination of dimensions of emotional regulation, reminiscence and reflection, openness, humor, and experience. This scale consists of 40 items and each of the dimensions of the wisdom has 8 items. Each item is scored in 6-point Likert scale from strongly disagree to strongly agree. Webster and Glück (2015) reported its Cronbach's alpha 0.886. SAWS scale score shows positive correlation with ego integration (Webster, 2007), adaptive leadership level (Kristinsson, 2005), positive psychosocial values such as personal growth and feeling coherence (Webster, 2010), civic values and altruism (Bailey & Russell, 2009), improvement of cancer patients (Costa & Pakenham 2011), forgiveness and mental health (Taylor & Bites-Webster, 2011), while it shows negative relationship with levels of stupidity (Webster, 2007).

Procedure

After specifying the instrument, since the aim was to evaluate the psychometric characteristics of the questionnaire as well as the relationship between wisdom, age and gender, the self-assessment wisdom scale was administered to all the participants and then the data was analyzed using using correlation coefficient, factor analysis and t-test.

Findings

Explanatory Factor Analysis

The exploratory factor analysis was used to investigate the number of wisdom questionnaire (SAWS) factors using principal components. In this research, the value of sampling adequacy index is equal to 0.859, reflecting the adequacy of sampling. In addition, the Chi-square value of Bartlett's Sphericity test was 4223.365, which was significant with a degree of freedom of 780 at a level of $p < 0.000$, indicating that the data correlation matrix in the population is not zero. The principal component analysis with the varimax method was conducted on 40 questions of Webster's Wisdom Questionnaire. In other words, in order to determine the most appropriate factors, after several varimax rotations, the Eigenvalues and the percentage of variance explained by each factor, the factors mentioned in Table 1 were extracted using principal components method and varimax rotation method.

Table 1.

Statistical characteristics of four factors of Webster's Wisdom Questionnaire after Varimax Rotation by Principal Component Method

Statistical index	Eigenvalue	Explaining percentage Variance	Explained variance accumulated percentage
Hypothetical factors			
1	436.4	089.11	089.11
2	557.3	893.8	982.19
3	377.3	442.8	424.28
4	302.3	254.8	678.36

In total, these four factors explain 36.6% of the total variance.

The matrix and questions and extracted factors after the rotation were obtained, which they are shown in Table 2. Based on the table 2, questions 17, 27, 32, 7, 12, 6, 38, 2, 37, 34, 22 are covered by one factor. Questions 29, 1, 21, 36, 20, 40, 5, 16, and 31 are covered by one

factor. Questions 29, 14, 19, 39, 24, 9, 4, 10, 30, 25, and 35 are also covered by one factor. The questions 8, 13, 23, 33, 3, and 28 are also covered by one factor and question 15 is not covered by any factor and as questions 28, 33, 35, 20, 36, 27, 18, 22, 21 are covered by two factors, they are not reliable and they are removed.

Table 2.

Correlation (factor loads) of questions and factors assumed

Questions	Factors			
	Emotional regulation	Experience	humor	Reminiscence and refection
17-I am very good at identifying my emotional states.	.642			
27- I am good at identifying subtle emotions within myself	.626	.342		
32-I can regulate my emotions when the situation calls for it	.626			
7-I can control my emotions when I make personal decisions	.624			
12-I am aware of my emotions	.589			
18- Reviewing my past helps me gain perspective on current concerns.	.531			.416
2- It is easy for me to adjust my emotions to the situation at hand	.491			
38- Reliving past accomplishments in memory increases my confidence for today	.466			
6-I have had many important decisions during my life	.437			
37-It seems I have a talent for reading other people's emotions	.402			
34- Now I find that I can really appreciate life's little pleasant moments	.399			
22-I can freely express my emotions without feeling like I might lose control	.383		.371	
26-I have lived through many difficult life transitions		.758		
1- I have overcome many painful events in my life		.629		
21-I have seen much of the negative side of life (e.g., dishonesty, hypocrisy).		.616		.318
11- I have dealt with a great many different kinds of people during my lifetime		.585		
36-I've learned valuable life lessons from others	.324	.542		
20- I often look for new things to try		.422	.374	

Questions	Factors			
	Emotional regulation	Experience	humor	Reminiscence and reflection
40-I've often wondered about life and what lies beyond		.409		
5- I like to read books which challenge me to think differently about issues		.388		
16-I have experienced many moral dilemmas		.378		.368
31- I've personally discovered that "you can't always tell a book from its cover		.322		
29-I often use humor to put others at ease			.594	
14- I try and find a humorous side when coping with a major life transition			.578	
19-I am easily aroused to laughter			.572	
39- I can make fun of myself to comfort others			.498	
24- At this point in my life, I find it easy to laugh at my mistakes			.492	
9-There can be amusing elements even in very difficult life situations			.489	
4- can laugh at personal embarrassments			.470	
30- I like being around persons whose views are strongly different from mine			.449	
10-I enjoy listening to a variety of musical styles besides my favorite kind			.428	
25- Controversial works of art play an important and valuable role in society			.357	
35- I'm very curious about other religious and/or philosophical belief systems		.318	.339	
15- I enjoy sampling a wide variety of different ethnic foods				
8- I often think about my personal past				.787
13- I reminisce quite frequently				.773
23- I often recall earlier times in my life to see how I've changed since then				.755
33- I often find memories of my past can be important coping resources	.406			.589
3- I often think about connections between my past and present.				.521
28- Recalling my earlier days helps me gain insight into important life matters	0.505			0.509

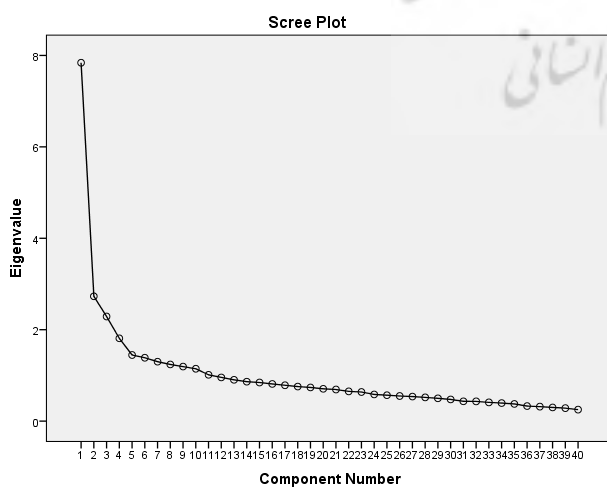


Figure 1.
Scree plot for determining the number of factors

This diagram shows the variation of the eigenvalues in relation to the factors. Based on this diagram, it can be seen that from the fourth factor afterwards, the variations in the eigenvalue decrease, so the four factors can be considered as important factors, which have the highest

contribution in explaining the variance of the data. The distribution of frequency, mean, standard deviation and subjects of research in terms of gender is presented in Table 3.

Table 3.
Descriptive statistics

	gender	N	Mean	SD	Mean standard error
Experience	female	293	4.5184	.70424	.04114
	male	102	4.7661	.58668	.05809
Emotion	female	293	4.2093	.68327	.03992
	male	102	4.3607	.55737	.05519
Reflection	female	293	4.5057	.73225	.04278
	male	102	4.4343	.71629	.07092
Humor	female	293	3.9355	.75105	.04388
	male	102	4.0114	.64583	.06395
Openness	female	293	4.3372	.69096	.04037
	male	102	4.4261	.65059	.06442
Total score of wisdom	female	293	4.3012	.52852	.03088
	male	102	4.3997	.41206	.04080

Table 4.
T-TEST test for relationship between gender and wisdom factors

	t	df	Sig	Mean differences	Standard error difference
Experience	-3.187	393	0.002	-0.24768	0.07771
Emotion	-2.015	393	0.045	-0.15131	0.07510
Reflection	0.853	393	0.394	0.07140	0.08371
Humor	-0.910	393	0.364	-0.07587	0.08340
Openness	-1.136	393	0.256	-0.08895	0.07827
Total score of wisdom	-1.709	393	0.088	-0.09848	0.05762

Based on the results of the above Table, as significance level is more than 0.05, two factors of experience and emotion are significant and the relationship between gender and the wisdom score is confirmed in two dimensions of experience and emotion, but the relationship of other dimensions including reflection, humor, openness and the total wisdom score and gender is not confirmed. The

convergent reliability of this questionnaire was measured using Pearson correlation coefficients between the factors and the whole test and each of the subscales. In addition, Cronbach's alpha values for internal consistency were calculated. It was obtained 0.83 for the total questionnaire, and 0.80, 0.82, and 0.79, and 0.83 for factors of experience, emotion, humor, and openness, respectively.

Table 5.
Correlation of each of the factors with age

	age	Wisdom score	experience	Emotion	Reflection	humor	openness
Age	1	.140**	.144**	.215**	.082	.040	.034
Wisdom score		1	.751**	.713**	.684**	.699**	.772**
Experience			1	.427**	.452**	.355**	.495**
Emotion				1	.388**	.372**	.427**
Reflection					1	.255**	.355**
Humor						1	.525**
Openness							1

Table 5 shows that the factors have a significant relationship with each other, reflecting the convergent validity of this test. Each of the factors has a significant correlation with the whole questionnaire ($p < 0.01$), which their range is from 0.255 to 0.772. As shown in Table 5, age has significant and positive relationship with total score, experience and emotion, while it has no significant correlation with reflection, humor, and openness.

Discussion and Conclusion

Validity and reliability of the Webster's Wisdom Questionnaire were investigated in this study using different methods. The results of factor analysis on the Webster's Wisdom Questionnaire confirmed the construct validity of this questionnaire. The factors extracted from this scale in this study were slightly different from those found in the original form of Webster's Wisdom Questionnaire. Webster (2003) extracted five factors of experience, emotion, reflection, humor, and openness from this questionnaire. However, in this study, in which questionnaire items were analyzed using explanatory factor analysis, the four factors of experience, emotion, reflection, and humor were extracted, and the factor of openness was not extracted. This difference can be attributed to difference between the sample population belonging to different ethnical and cultural groups and the wisdom indices. Comparison of the subjects in terms of gender in the wisdom total scores and each of the factors using t test revealed a significant difference between males and females in two dimensions of experience and emotion. In both factors, females obtained higher scores than males. This result was consistent with that of the Webster research (2003). With regard to wisdom and gender relationship, it can be stated that wisdom is not limited to males or females. Yang (1964, p. 196) described the difference of wisdom in males and females in this way: "from the women perspective, a wise

woman is usually perceived as a woman who is superior in terms of appearance, spiritual personality, mother of the earth, or the goddess of nature, or love. However, from men perspective, a superior man is perceived as a creative and wise old man (quoted by Birren & Swenson, 2005, p. 13).

Nevertheless, the difference in the general scores and factors of wisdom can be attributed to the difference in the socialization of women and men. Researchers believe that men may have cognitive advantages, while women may have advantage in intrapersonal domain (Baden & Hague, 2015). Orwoll and Achenbaum (1993) also concluded that wisdom of people does not depend on their gender, but women and men may show their wisdom in different ways. The reliability criterion of the present scale was Cronbach's alpha and internal correlation, which indicated the high reliability of this tool. As seen, there is a positive and significant relationship between the components of wisdom scale and total score of the wisdom, indicating that people with a high level of wisdom enjoy high levels of experience, emotional regulation, reflection, humor, and openness to performing a work. The correlation between the total score of the wisdom and the two factors of emotion and experience and age were significant. The significant relationship between age and gender has been confirmed in studies conducted by Baltes, Smith, and Staudinger (1992); Clayton and Birren (1980); Sternberg (1986); as well as Takahashi and Overton (2005). Great number of researchers has confirmed that passage of time and increasing age has an important role in increasing the experience of people. The most comprehensive view of the relationship between age and wisdom belongs to Sternberg. Sternberg (2005) presented five general views or hypothesized models with regard to the between age and wisdom. Except for the first view, considers the wisdom as the result of spiritual awakening in old age, other models assume this wisdom starts to grow in early years of life

(Robinson, 1990; Smith & Baltes, 1990).

Thus, it cannot be stated that wisdom increases with age certainly, but researchers expect people with the maximum level of wisdom to be at least 60 years of old (Glück & Bluck, 2013; Staudinger, 1999). Hence, a valid wisdom scale should not show a negative relationship with age, and those with high scores on wisdom scales should have an older age (Glück et al., 2013). This relation has been confirmed in this research and it is in line with the result of research conducted by Meacham (1990) and Staudinger (1999). Given the results of this research, Webster's Wisdom Questionnaire is an appropriate tool for researchers in examining the wisdom in self-assessment way. Investigating the validity and reliability of this scale on groups other than student groups is recommended. Moreover, given different patterns of wisdom among female and male subjects (Orwoll & Achenbaum, 1993), it is recommended that the questionnaire to be factor analyzed separately for females and males in future studies.

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