The Validation and Development of the Subjective Happiness Scale for the Adults in South Korea

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Abstract: In reality, it is difficult to quantify the level of happiness perceived by people and express it as an objective figure. Of course, various measurement tools that quantify and measure the degree of happiness of the people are being used. Still, most of the measures are made abroad in foreign scholars, so it is questionable whether they are suitable tools developed considering of the characteristics or environment of Koreans. The purpose of this study is to derive a Korean version subjective happiness scale suitable for the characteristics of Korea and to verify its validity. To achieve the purpose of the study, the components constituting subjective happiness were derived through previous studies, and the question items suitable for each component were modified through focus group interviews with experts, and then reorganized to suit this study. To verify the suitability and construct validity of the factor structure of the derived preliminary measure, a survey was conducted targeting 1,000 adults aged 20 years or older. The collected data were analyzed using the SPSS 26.0 and AMOS 24.0 statistical programs. The reliability of the developed happiness scale was .944 and reliability was secured. The CR (convergent reliability) value, representing convergent validity, was higher than .7 in all domains. Discriminant validity was also verified as the result value using two standard error interval estimates was 1.271, .655 $\neq$ 1. Therefore, the happiness scale consisting of 19 items in the final five factors developed by this study will be able to work as a scale to measure the degree of subjective perception of happiness considering the characteristics of Koreans.

Keywords: Subjective Happiness, Scale Development, Validity, Happiness Scale

1. Introduction

Recently, interest in expanding social services has been increasing in South Korea, and various social services are being built and provided. In particular, as social problems such as social polarization, changes in family structure, population aging, and low fertility arise, the needs for social services is increasing. As a result, the social service sector is gradually expanding, starting with the social service innovation project in 2007 and continuing to the present in South Korea. The purpose of social services is to improve happiness and the quality of life of the people including service users, and to promote overall social welfare. Social service provides services based on this purpose, and aims to raise welfare

awareness and improve quality of life in response to and prevention of social problems. In addition, most social welfare services provided by the welfare state also provide services for the same purpose[1].

To measure the effectiveness of welfare provisions including social services, various measures are needed. In addition, since social services are provided with the goal of emotional, economic, and physical stability of users, the subjective happiness of adults(including the elderly) is a major factor that can measure the specific effectiveness of social service provision. Therefore, the degree of subjective happiness perceived by the adults and social service users can be viewed as an important measurement area to confirm the effectiveness of social welfare provisions, including the social services.

However, study to develop an objective quantified scale to measure the level of subjective happiness, which is the representative achievement goal and effectiveness of social service program targeting Koreans, especially the adults of the social service users, is limited. Most of the quantified scales that can measure the degree of subjective happiness are developed in foreign countries, and have limitations in measuring the degree of happiness considering the characteristics of Koreans. The Oxford Happiness Index (OHI) developed by Argyle, et al.[2], Kozma and Stones[3], and Choi, et al.[4]' child happiness scales are representative studies. In addition, there are scale studies using similar concepts such as the subjective prosperity of Ryff[5][6], the subjective prosperity of Kim[7], and the happy life scale of Kim et al.[8]. Most of the happiness-related scale studies conducted in South Korea are studies using already developed measures by foreign scholars, so it is difficult to say that those are modified scales whose validity has been verified according to characteristics of Koreans. In addition, the study of Choi, et al.[4] is limited because that is a happiness scale development study for children. Kim, et al.[8]'s happy life scale is also a study of college students, and it has a limit to measuring the degree of subjective happiness perceived by the adults who are subject to social services.

The purpose of this study is to develop a tool that can measure subjective happiness that can reflect the characteristics of Koreans. As an objective measure that can evaluate the effectiveness of a project as an achievement goal of social services, we will try to develop a measure that can be easily quantified for the people to understand the degree of subjective happiness perceived by the service users. The subjective happiness scale developed through this study will be used as a tool to measure and improve the subjective happiness of the adults and social service users, and furthermore, it will be used to measure and evaluate the effectiveness of the welfare provisions. In addition, it can be a foundation to promote subjective happiness and related research.

2. Theoretical Background

2.1 The Sense of Happiness

The subjectively perceived change in the perception of happiness is the results of the most representative effectiveness measurement, along with the reduction or resolution of problems that users have among the goals to be achieved by social services, and improvement of happiness, the quality of life, or subjective life satisfaction. From an objective point of view, the happiness of service users can be confirmed through various social indicators, such as suicide rate and poverty rate. However, just because happiness indicated by the objective social indicator is high, it cannot be said that the subjective happiness experienced and perceived by service users is high.

Even if you are financially wealthy, your happiness may be low, and on the contrary, your subjective happiness may be high even if you are financially difficult. The subjective sense of happiness perceived by social service users may be closely related to the quality of life, but it is common that there is a difference between the quality of life and the subjectively perceived happiness of each user. That is, the subjective and psychological aspects of an individual are more important than objective factors or living conditions related to quality of life that are necessary to understand happiness[9]. According to previous

studies, income beyond subsistence did not increase happiness[10], and even the most economically wealthy people were less happy than those who were not. Income and happiness were not proportional to national income above $10,000[11]. After all, the improvement of objective life conditions may be a necessary condition for an individual to lead a happy life, but it cannot be a necessary and sufficient condition[8]. According to Diener[9], the characteristics of subjective happiness are first, subjective. That is, while objective states such as health, comfort, and wealth can affect happiness, those external conditions are not essential and essential to happiness, and happiness depends on personal inner experiences. Second, happiness reflects the more positive and active aspects of life. This does not mean that there are no negative emotions, but that positive emotions and negative emotions influence happiness independently of each other. Third, happiness is a person's overall and holistic assessment of all aspects of life.

As such, subjective happiness is largely divided into cognitive factors, life satisfaction, and emotional factors, positive and negative emotions. The emotional component of happiness, that is, emotional well-being, refers to people's immediate evaluation of events or experiences that occur in their lives. Particularly, happy people are not people who feel strong emotions, but often feel pleasant emotions at an appropriate level most of the time. can be seen as a person. At the same time, the cognitive element of happiness is a cognitive evaluation of one's overall life, and when people judge their life, they do not rely solely on their emotions, but rather the consciousness of evaluating their state of life in comparison with the standards set by the individual. They make positive and cognitive judgments and feel satisfied when the results are positive. This judgment is indirectly influenced by emotion, but it is distinct from the emotion itself[12][13].

2.2 Measure of Happiness

A representative method of measuring happiness can be confirmed using two methods. First, there is a method of measuring using social indicators based on various statistical data related to people's happiness. Second, there is a method of measuring using a subjective indicator that quantifies their perception or experience by asking individual questions. Also, when it comes to measuring the subjectively perceived happiness of individuals, there may be a single-item questioning method and a multiple-item questioning method as a measurement method.

In the case of measuring happiness through objective social indicators, the quantified level of happiness is measured through suggested social indicators related to happiness, rather than reflecting the level or degree of subjective happiness perceived by individuals, then a discrepancy may occur from reality. In other words, there may be a gap between the level of happiness perceived by the people and the level of happiness through social indicators. Also, if objective social indicators themselves do not reflect reality, there is a limit that serious errors may occur in the measurement results of happiness. For example, in Korea, whether the number of domestic violence or child abuse is an objective social indicator that reflects reality is still controversial.

When measuring happiness perceived psychologically by an individual as a single item, the measurement question item asks general happiness, and the characteristic is that it usually asks a single item. Although there is a limitation in that questions in various areas that simply constitute happiness are measured with one question item, it has an advantage in that it simply measures the happiness perceived by the people with a single item. In the case of measuring happiness composed of complex items, the question items include various question items on measurement factors that compose happiness, that is, in terms of being able to comprehensively measure the perception of various aspects of happiness. Although it has the advantage of being theory-oriented and objective than the single-item measurement tool, it requires more time and effort than the single-item measurement tool. The most representative

multi-item measurement tools for measuring happiness include the Oxford Happiness Index, the depression-Happiness Scale, and the happiness scale of MUNSH[3].

Social service seeks to change the lives of individuals and enhance their sense of happiness through various projects to solve the problems and desires of the individuals, and to participate in counseling, education, and cultural and leisure projects. Social problems that occur in complex and diverse fields cause modern people to experience loneliness and loss of role due to psychological and emotional instability, economic instability due to reduced income, and decrease in social participation activities, and have a negative effect on reducing the happiness of the people. Therefore, as an effort to improve the subjective sense of happiness perceived and experienced by social service users, the subjective sense of happiness perceived by the public can be improved through the provision of various services such as counseling, education, and sports and cultural activities. In this study, we will develop a happiness measurement tool that indicates the degree of personal and subjective happiness perceived by the adults who use social services. In particular, to overcome the limitations of social indicator analysis and the shortcomings of single-item measurement tools, we will develop a happiness measure that is a subjective scale recognized by the people and composed of complex question items.

2.3 The Components of the Subjective Happiness

Looking at the preceding studies on the determinants that affect happiness, happiness is first, economic factors, second, life events, third, personality or temperament, fourth, level of adaptation or adaptation, fifth, activity level, and finally known to be influenced by the sense of purpose[14]. However, as the economic level is an external component of quality of life, it is a measurement item of the socioeconomic level, so it is desirable to measure it in the quality of life, so it is desirable to exclude it from the measurement factor measuring happiness. To measure the degree of psychological prosperity that an individual subjectively perceives, that is, the level of perception of happiness, it is necessary to measure the individual's adaptability or adaptability, personal character or temperament, activity power, and sense of purpose (for life). Activity factors include an individual's health level, relationships with others, and social participation, and personality factors indicate individual psychological characteristics such as dissatisfaction or satisfaction, pleasure, or difficulty. Adaptability includes the ability to adapt to the environment, to dominate, and to make decisions. Happiness also means pleasure or satisfaction experienced in human life, so this pleasure can be affected by self-control, autonomy, and sense of purpose in life. As emphasized by[5], the ability to live one's life independently, that is, autonomy and a sense of purpose, can also be said to be important determinants of happiness.

Therefore, in this study, as the components of happiness, first, the degree of health perceived by an individual (health), second, pleasure or satisfaction (life satisfaction), third, relationship with others (relationship), fourth, the ability to control one's life (environmental control), and fifth, it assumes that it is composed of autonomy to live life independently.

3. Research Method

3.1 Research Design and the Processing of Scale Development

This study utilized quantitative research methodology to develop a quantified scale to measure subjective happiness and to verify the construct validity of the developed scale. To develop a scale to measure subjective happiness, a specific concept of subjective happiness was defined through prior research, and the components of subjective happiness were derived. As for the components, a scale consisting of 23 items was derived which consists of five dimensions: health, environmental control, life satisfaction, relationship, and autonomy. To verify the face and content validity of the preliminary

measure of subjective happiness of a total of 23 questions drawn, first a focus group interview with experts (FGI) was conducted twice for groups consisting of scholars in social welfare academia and social service field experts. In-depth interview of the first group was conducted with five professors of social welfare related departments. The second group was consisted of seven professionals with more than 5 years of experience in organizations providing social services.

Modifications and supplements were performed on the components of the scale and the question items. As a result of the verification, it was found that there were no duplicate questions or inappropriate questions. Finally, preliminary questions consisting of 23 items were derived. To verify the model fit and construct validity of the subjective happiness preliminary scale whose content validity has been verified, a survey was conducted on social service users over 20 years or older living in Korea for about two months from October 2021.

Recruitment of survey participants was conducted targeting users who had experience in receiving social services with the help of the Social Service Support Center in 7 metropolitan cities in South Korea. The research was notified in advance to all agencies providing social service projects through the Social Service Support Center, and 1,000 people were randomly selected from among users who agreed to the research purpose for each agency and a survey was conducted after receiving a research consent form. Participants were selected by proportional sampling method considering sex, age, and region. The survey was conducted in the form of an anonymous questionnaire. Participants were notified prior to the survey that they could withdraw at any time if they did not wish to participate and that their personal information would be kept confidential. The final 820 copies of the questionnaire (collect rate 82%) were collected, and 816 copies were used for analysis, excluding six copies with missing data.

3.2 Measurement

In this study, preliminary measurement items were derived through literature review in order to develop a scale that can measure the subjective happiness for the adults. The measurement tool used for this purpose was developed independently based on the subjective happiness questionnaire presented in the Oxford Happiness Questionnaire, MUNSH[3], and Ryff[5]. To measure the subjective happiness of the adults who use social services, preliminary questionnaire items were set centering on the subjective happiness scale used in previous studies related to happiness and subjective prosperity. A preliminary happiness scale consisting of five dimensions and 23 items was developed.

3.3 Data analysis

In this study, data were collected through a survey and a causal relationship model was constructed using statistical techniques. To verify the fit of the constructed model, the collected data were analyzed using the SPSS 21.0 and AMOS 21.0 statistical programs. In this study, the response sheet used was composed of a 7-point scale, and the scale used was analyzed as follows to derive a standardized index using the scale and concept suggested in previous studies.

First, using the collected data, an exploratory factor analysis was performed using the principal component analysis and the varimax rotation method, and the overall reliability of the removed items was evaluated.

Second, confirmatory factor analysis (CFA) was performed using the remaining items in the exploratory factor analysis. For the confirmatory factor analysis, the Maximum Likelihood method was used, and it was verified whether the factor structure model obtained through the exploratory factor analysis was appropriate. This scale was verified through the absolute fit index, incremental fit index, and simple fit index.

Third, convergent validity and discriminant validity were verified to verify the validity of the final scale that had undergone exploratory factor analysis and confirmatory factor analysis. Convergent validity was verified through the values of standardized regression weights, and discriminant validity was verified through two standard error interval estimates.

4. The Results of the Study

4.1 General Characteristics of Study Subjects

The table below shows the general characteristics of the respondents who responded to the survey for the development of a subjective happiness scale for the purpose of this study.

[Table 1] The General Characteristics of the Respondents (N=816)

	Sort	Frequency	Percentage (%)
Sex	Male	376	46.1
	Female	440	53.9
	Total	816	100.0
Age	Between 20 to 30 years old	82	10.0
	Between 30 to 40 years old	132	16.3
	Between 40 to 50 years old	187	22.9
	Between 50 to 60 years old	236	28.9
	Under 65 years old	179	21.9
	Total	816	100.0
City	Busan	188	23.0
	Gwangju	55	6.7
	Daejeon	82	10.0
	Seoul	221	27.1
	Daegu	118	14.5
	Incheon	75	9.2
	Ulsan	77	9.4
	Total	816	100.0

4.2 Correlation Analysis

[Table 2] The Results of the Correlation Analysis Between the Five Factors of the Subjective Happiness Scale (N=816)

Variables	Mean	SD	Health	Environmental control	Life satisfaction	Relationship	Autonomy
Health	4.15	1.70	1				
Environmental control	4.20	1.68	.907**	1			
Life satisfaction	4.39	1.71	.894**	.914**	1		
Relationship	4.23	1.69	.843**	.862**	.889**	1	
Autonomy	4.24	1.68	.841**	.870**	.885**	.905**	1

**$p<.01$

The results of the correlation analysis between the five factors are shown in [Table 2]. As a result of

correlation analysis, it was found to be statistically significant (p<.01) among the five factors of the subjective happiness scale preliminary questions. In detail, environmental control and health .907, life satisfaction and health .894, life satisfaction and environmental control .914, relationship and health .843, relationship and environmental control .862, relationship and life satisfaction are .889, autonomy and health .841, autonomy and environmental control .870, autonomy and life satisfaction .885, and autonomy and relationship .905.

4.3 Reliability Analysis

Reliability analysis was performed to verify the degree of internal agreement for 23 items of 5 components and the results are the following. Cronbach's α of health was .948, Cronbach's α of environmental control was .952, Cronbach's α of life satisfaction was .961, Cronbach's α of relationship was .933, and Cronbach's α of autonomy was. 944.In general, reliability is considered to be secured when Cronbach's α coefficient is greater than .60. Therefore, the reliability of 23 items of five factors was secured.

4.4 A Confirmatory Factor Analysis

A confirmatory factor analysis was performed to secure the validity of the factor structure for the preliminary questions on the subjective happiness scale extracted as a result of the exploratory factor analysis. Confirmatory factor analysis is used to prove the validity of data, and the results of exploratory factor analysis can be verified by confirmatory factor analysis, so that more reliable conclusions can be reached. In general, since most of the variables used in research models are measured with multiple items, it is important to secure unidimensional. The purpose of confirmatory factor analysis is to secure unidimensionality, and it is an analysis method that pre-designates the items measuring the factor to be loaded only on each factor. [Fig. 1] shows the final model analyzed using the structural equation model.
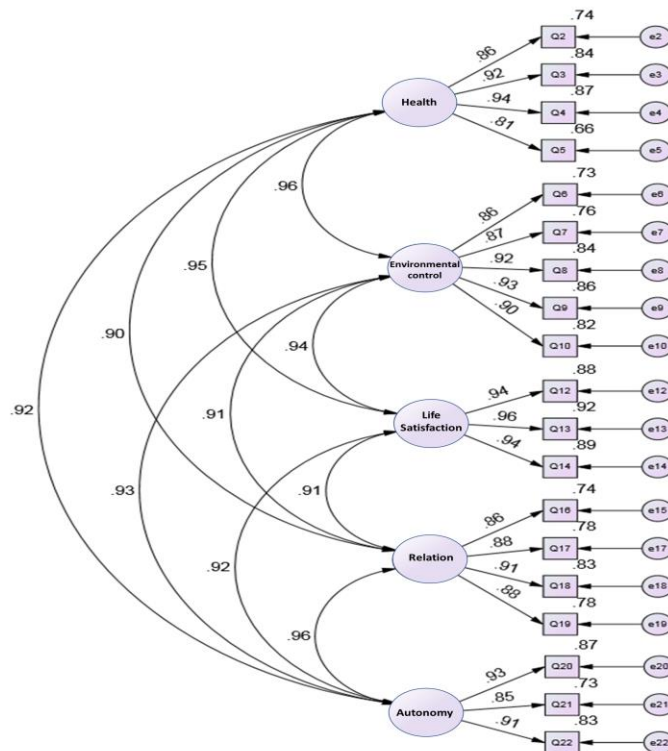
[Fig. 1] The Confirmatory Factor Analysis Model of Subjective Happiness Scale

Among the 23 items, the items with low explanatory power were 4 items (health: Q1, life satisfaction: Q11, Q15, autonomy: Q23), and finally, a confirmatory factor analysis was performed using 19 items. The absolute fit indices were χ^2=840.440(df=.142), p=.000, GFI=.902, and RMSEA=.077. As a result of examining the absolute fit index, the χ^2 verification, RMSEA, and GFI values were all at appropriate levels. The RMSEA should be less than .08, and the closer the GFI to 1, the better the fit[15]. The incremental fit indices were IFI=.967, TLI=.960, CFI=.967, which were above .90, indicating that the overall model fit was adequate. The simple fit index was PNFI=.798, PCFI=.803, and AGFI=. 869.PNFI, PCFI, and AGFI values were all found to be at appropriate levels. PNFI and PCFI should be higher than .60, and the closer AGFI to 1, the better the fit. When looking at the model fit comprehensively, it can be interpreted that the fit of the measurement model is generally good, and that the measurement model fits the data well.

The analysis results of the final research model are shown in <Table 3>. In the final model, standardized regression coefficients and covariances between the measured variables and factors were all statistically significant (p<.001). Also, the loadings of the standardized regression coefficients were all above .50.

[Table 3] The Final Model of the Factor Analysis Results of the Subjective Happiness Scale (N=816)

No. of Question		Factor	Estimate	S.E. (Standard Error)	C.R. (Critical Ratio)	P
Q2	←	Health	1.000			
Q3	←	Health	1.043	.028	37.915	***
Q4	←	Health	1.041	.026	39.737	***
Q5	←	Health	.916	.030	30.109	***
Q6	←	Environmental control	1.000			
Q7	←	Environmental control	1.070	.031	34.051	***
Q8	←	Environmental control	1.084	.029	37.573	***
Q9	←	Environmental control	1.126	.029	38.333	***
Q10	←	Environmental control	1.077	.030	36.379	***
Q12	←	Life Satisfaction	1.000			
Q13	←	Life Satisfaction	1.036	.018	57.825	***
Q14	←	Life Satisfaction	1.025	.019	54.150	***
Q16	←	Relation	1.000			
Q17	←	Relation	1.017	.029	34.679	***
Q18	←	Relation	1.042	.028	36.920	***
Q19	←	Relation	.952	.028	34.598	***
Q20	←	Autonomy	1.000			
Q21	←	Autonomy	.881	.023	38.197	***
Q22	←	Autonomy	.948	.020	46.423	***

***p<.001

4.5 Verification of the Validity

4.5.1 Verification of the Convergent Validity

Convergent validity, also called concentrated validity, indicates that there must be a high correlation between values measured by different methods to measure the same concept. In this study, a method based on convergent reliability (CR) values was used to verify convergent validity. A CR value of 0.7 or higher is interpreted as having convergent validity[16-18]. The reliability of the latent factors shown in this study was health .799, environmental control .857, life satisfaction .881, relationship .805, autonomy .796, and convergent validity was secured because the value was 0.7 or higher.

4.5.2 Verification of the Discriminant Validity

Discriminant validity presupposes that there must be clear differences in measures between different variables. In other words, it can be said that discriminant validity is secured only when the correlation between one variable and another is low. In this study, two standard error interval estimates, a criterion for verifying discriminant validity, were used. Since discriminant validity using the standard error estimation interval formula can be said to be secured only when the correlation between the variables is low, it is necessary to check whether the hypothesis that the variables are the same can be rejected[17][19]. The coefficient between factors was .963 and the corresponding standard error (S.E) was .154. By substituting the coefficient value of .963 and the corresponding standard error of .154, the calculated values were 1.271, .655 ≠ 1. That is, discriminant validity was secured because the hypothesis that the variables were identical was rejected.

[Table 4] The Final Items of the Subjective Happiness Scale (N=816)

Factor	Item	Question Item	No. of questions
Health	Q2	I am physically healthy.	4
	Q3	I am mentally healthy.	
	Q4	I am comfortable, not overworked or stressed.	
	Q5	I tend to sleep well.	
, Environmental control	Q6	I don't think trivial things (such as chores) bothersome.	5
	Q7	As I get older, many things seem to get easier.	
	Q8	I manage my time relatively well.	
	Q9	What I do now interests me as much as before.	
	Q10	I tend to do well with the tasks given to me.	
Life satisfaction	Q12	My life was generally a happy one.	3
	Q13	I am satisfied with much of my life.	
	Q14	It is fun to live life every day.	
Relationship	Q16	I am not lonely.	4
	Q17	I have a hobby that I enjoy.	
	Q18	When I have time, there is a meeting or space where I can be active and enjoy.	
	Q19	Overall, I trust others and maintain amicable relationships.	
Autonomy	Q20	I am living the life I want	3
	Q21	I tend to make decisions easily.	
	Q22	I think I have good control over my life.	

Through the process of confirmatory factor analysis and validation, the final items of the subjective happiness scale are 19 items: health 4 items, environmental control 5 items, life satisfaction 3 items, relationship 4 items, autonomy 3 items, and the final item is [Table 2-55] is shown. As a result of the reliability analysis based on the final question, Cronbach's α of health was .933, Cronbach's α of environmental control was .952, Cronbach's α of life satisfaction was .961, Cronbach's α of relationship was .933, and Cronbach's α of autonomy was .933. It was found to be .929. Reliability was secured for subjective happiness scale: health 4 questions, environmental control 5 questions, life satisfaction 3 questions, relationship 4 questions, and autonomy 3 questions.

There was a total of 23 preliminary questions on the subjective happiness scale, and as a result of confirmatory factor analysis, four questions with low explanatory power (health: Q1, life satisfaction: Q11, Q15, autonomy: Q23) were found. Finally, the subjective happiness scale consisted of 19 items and was divided into 5 factors.

5. Conclusion

The purpose of this study is to develop a Korean version of the happiness scale for adults, rather than the general population and to verify the validity of the developed scale. Therefore, the happiness scale developed by this study is not a scale recognized by the general public, but by adults who experienced welfare provisions, specially the social services. So, there is a limit to using it as a universal scale to measure the perceived happiness of all citizens.

The happiness scale derived from this study consisted of 19 final questions in five dimensions(factors), including health, environmental control, life satisfaction, relationships, and autonomy. The reliability of the developed happiness scale was .944 and reliability was secured. The construct validity also was verified. The CR (convergent reliability) value, which represents convergent validity, was higher than .7 in all domains. Discriminant validity was also verified as the result value using two standard error interval estimates was 1.271, .655 ≠ 1.

The happiness scale developed in this study is a tool to objectify the degree of happiness for the adults considering Korean culture and characteristics. Therefore, it is worth as a measure that overcomes the cultural and linguistic problems of uncritical application and utilization in South Korea of the existing measures presented in foreign countries. In addition, the happiness scale presented in this study can be used as an objective indicator to prove the effectiveness of social service projects provided for the purpose of enhancing the happiness of the Korean. Since this scale is based on subjective perception of the people, it can objectively quantify and express the happiness that people perceive themselves beyond the limits of indirect happiness indicators that can be measured through various social indicators. This scale also can help to confirm the level of national welfare improvement. The study on subjective happiness scale can be activated through this scale development study and contributed to the research vitalization on the development of the Korean version of the happiness scale for people with disabilities, the elderly, and children and adolescents.

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