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A Cohort Study of Mental, Physical and Behavioral Impacts of Early (at Age 55) Compulsory Retirement in Korea*

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Ⅰ. Introduction

Republic of Korea's life expectancy has greatly increased in 20 years from 55.2 in 1960 to 65. 9 in 1980. Reflecting this tendency, proportion of people aged 55 and over increased 0.3 percent during the same period from 2.7 percent in 1960 to 3.0 percent in 1980. Compulsory retirement age, however, has not changed during the same period and remained at 55 in most of firms in Korea.

The proponent of keeping the compulsory retirement age of 55 maintains that, in the face of increasing influx of young workers into labor force, it is imperative to provide open avenue for advancement for the young in order to improve productivity. The plight of those forced to retire at the age of 55 is acknowledged but it has not brought about any change in the retirement policy. The objective of this research is to analyze and document the impacts of compulsory retirement on mental and physical conditions and behavior of those forced to retire.

Most studies conducted in Korea of its compulsory retirement system are about the economic plight of the retirees and the implications of wasted manpower. To a lesser extent, the physical conditions of the retirees have also been studied. To the best of our knowledge, however, there has been no systematic study of mental and behavioral impacts of compulsory retirement system in Korea. This study proposes to fill this research gap.

The research aims at investigating the impacts of early compulsory retirement upon the mental, behavioral, physical, and economic conditions of the retired workers. For this purpose, a longitudinal study may be a more reliable method. However, the time required for such a study, say, about 3 to 5 years, is too long for the scope of the study. Thus, a study of difference of differences is warranted. In this study, cohort groups in key variables will be chosen. Specifically, the research aims at testing the following hypotheses statistically.

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H-1. Compared with the workers retired at age 60, those forced to retire at age 55 have a lesser degree of self-confidence in themselves, a lesser degree of mental alertness, a greater degree of indecision, a lesser degree of agressiveness and a greater degree of pessimism about life in general.

H-2. Compared with the workers retired at age 60, those forced to retire at age 55 have a greater number of episides of illnesses, a greater number of visits to hospitals and clinics for curative purposes and a greater number of complaints about real or imagined illnesses and pains.

H-3. Compared with the workers retired at age 60, those forced to retire at age 55 have a greater amount of economic loss. Moreover, the economic loss of those forced to retire at age 55 is greater than the amount of salaries and wages lost due to the early enforced retirement. It includes health care costs increased by the deteriorating mental and physical health caused by the retirement.

From the various dependent variables specified in this research, we identify the real dimension of the mental, behavioral, and physical conditions of the retired workers. Factor analytic technique is used in this case. From the variables denoting the mental and behavioral conditions, we identify seven factors ; self-fulfilment, optimism, stress, authoritarianism, sociality, private life, and perceived prosperity. And three factors (chronic disease, current disease, and restricted activity) are identified from the physical conditions.

For these factors together with the economic condition of the retired workers, we statistically analyze and compare the similarities and differences between the group retired at age 55 and the group retired at age 60. Impacts of the intermediate variables upon the factors are also considered. Results of the bivariate and multivariate analyses are generally consistent with our hypothesis. Early compulsory retirement exerts negative impacts upon the mental, behavioral, physical, and economic conditions of the retired workers.

The remainder of this report is organized as follows. Following this introductory chapter, Chapter Ⅱ describes the data and methodology used in the research. Analysis of the data is conducted in Chapter Ⅲ. Major fingings and results for the hypothesis testing are provided. Chapter Ⅳ concludes the report with a brief summary. Some implications for retirement policy are also recommended.

Ⅱ. Data and Methodology

1. Method of Analysis

From the various dependent variables specified in this research, we identify the real dimension of the mental, behavioral, and physical conditions of the retired workers. Factor analytic technique is used in this case. The factors derived in this manner are the objects of analysis. Two types of methodologies are used in this research.

First, we perform the bivariate analysis. For the factors denoting the mental, behavioral, and physical conditions together with the economic condition of the retired workers, we statistically analyze and compare the similarities and differences between the group retired at age 55 and the group retired at age 60. Using T-test and analysis of variance (ANOVA), impacts of the intermediate variables upon the above factors are also tested statistically.

Secondly, in order to sort out the pure impacts of the retirement age upon the mental, behavioral, physical, and economic conditions of the retired workers, multivariate analysis is performed. Multiple regression analysis, which we are to use in the next section, fits to our purpose very well among others. This type of methodology enables us to control for the effects of the

intermediate variables.

2. Variables

The research purposes to investigate the mental, behavioral, physical, and economic conditions of the retired workers. Specifically, we compare them between the group retired at age 55 and the group retired at age 60, controlling for other effects caused by the intermediate variables such as individual and family characteristics and economic status of the retired wolkers. Various proxies for the mental, behavioral, physical, and economic conditions of the retired workers are examined, and used as dependent variables. We specify the dependent variables and other intermediate variables below. And Table 1 summarizes the variables used in this research.

1) Dependent Variables

(1) Mental and Behavioral Conditions

In general, early compulsory retirement leads to the reduction of income, change of daily activities and roles, and feeling of alienation of the retired workers ; which, in turn, affect the mental and behavioral conditions of them. In other words, early compulsory retirement may be negatively associated with the mental and behavioral conditions of the retired workers. In this research, we examine seperate aspects of the mental and behavioral conditions of the retired workers who have been retired compulsorily. These include feeling of well-being, self-confidence, spontaneity, daily activity pattern, and world-life outlook. Several variables are investigated in order to measure each of the aspects of the mental and behavioral conditions. We specify the variables used below.

A. Feeling of Well-being

Whether a retired worker secures his sure means of living is directly related with his mental and behavioral conditions. Thus, it can be said that a retired worker with benefits from others feels higher level of well-being. Therefore, we choose the economic benefits from public (government) expenditure in order to measure a dimension of the feeling of well-being of the retired workers.

Besides the economic benefits such as pension, which is directly related with the feeling of well-being of the retired workers, the medical benefits will be also positively associated with the feeling of well-being. Thus, it can be conceived that admission in the health insurance can measure this dimension of the mental and behavioral conditions of the retired workers.

In addition, we measure the following variables as proxies for the feeling of well-being ; perception on the standard of living, relationship with family members occupation of a room to oneself, frequency of contacts with the family members, worriment about home affaires, tension in daily life, expectancy about the remainder of one's life, role satisfaction, and consciousness of one's health status.

B. Self-confidence

The old persons after retirement tend to be spiritless and become desperate. Because the scope of the social life is significantly limited irrespective of the intention, retired workers may lose their self-confidence. And it is likely to be more severe for the workers retired at age 55 than for the workers retired at 60. In this research, we choose the following four variables in order to measure self-confidence of the retired workers ; position in the family, desire for job, ability to work more, and decision making in the home affairs.

C. Spontaneity

The old persons after retirement spend most of their time at home, and have little time to participate in community or political activities. Moreover, they are likely to take passive position at the meetings. Thus, as proxy variables for

Table 1. Summary of the variables used in the research

I. Dependent Variables

A. Mental and Behavioral Conditions

1) Feeling of Well-Being
- Benefits from public expenditure
- Perception on the standard of living
- Relationship with family members
- Tension in daily life
- Occupation of a room to oneself
- Frequency of contacts with the family members
- Admission in the health insurance
- Expectancy about the remainder of one's life
- Role satisfaction
- Worriment about home affairs
- Consciousness of one's health status

2) Self-Confidence
- Position in the family
- Desire for job
- Ability to work more
- Decision making in the home affairs

3) Spontaneity
- Participation in community activities
- Participation in political activities
- Position at the meetings
- Communication with friends

4) Daily Activity Pattern
- Leisure time per week
- Frequency of contacts with acquaintances
- Time spent at home per day

5) World-Life Outlook
- View of the social life
- View of one's past life
- View of the rest of one's life

B. Physical Conditions

1) Number and Types of Illness
- Number of current disease
- Number of chronic disease
- Illness during the last two weeks

2) Number of Times Seeking Health Care
- Visits to medical institutions during the last two weeks
- Number of sick days during the last two weeks
- Number of chronic sick days during the last two weeks

Table 1. (Continued)

3) Number of Sick Bed Days

Number of days in hospital during the last two weeks
Number of days in hospital due to current disease during the last two weeks
Number of days in hospital due to chronic disease during the last two weeks

4) Illness Symptom
Abnormal symptom in the medical examination
Digestive condition
Respiratory condition

5) Number of Restricted Activity Days
Number of sick days during the last six months
Uncomfortableness in daily activities

C. Economic Condition

Annual income after the retirement

II. Intermediate Variables

A. Individual Characteristics

Age
Present employment
Health status at the time of retirement
Education level
Religion

B. Family Characteristics

Spouse
Number of off-springs

C. Economic Status

Ownership of housing
Annual income before retirement
Health care expenditure

III. Independent Variables

Retirement age

spontaneity of the retired workers, we choose participation in community activity, participation in political activity, position at the meetings, and communication with friends. Each of the variables are measured by the 3-point scale.

D. Daily Activity Patterns

The primary influence of the compulsory retirement on the retired workers is to change their daily activity patterns by changing their social activity patterns. It is anticipated that the early

compulsory retirement has negative impacts on the daily activity patterns, and thus has negative impacts on the mental and behavioral conditions of the retired workers. It may be more severe for the workers retired at age 55 than the workers retired at age 60. To measure daily activity patterns of the retired workers, we choose the following three variables ; leisure time per week, frequency of contacts with acquaintances, and the time spent at home per day.

E. World-life Outlook

It is worth while to measure the world-life outlook of the retired workers to investigate their mental and behavioral conditions. Although it cannot be said that the mental and behavioral conditions of a retired worker are completely influenced by their view of the world, it nevertheless has its own domain which is a part of his mental and behavioral conditions. As proxy variables representing world-life outlook of the retired workers, we measure view of the social affairs view of one's past life, and view of the rest of one's life. The variables are measured by the 3-point scale.

(2) Physical Conditions

Early compulsory retirement tends to negatively affect physical conditions of the retired workers. It results from the change of the patterns of the daily life, the limitation of the participation in the social activities, and worsening the economic condition of the retired workers.

In this research, we examine seperate aspects of the physical conditions of the retired workers. These includes episodes of illnesses, number of times seeking health care, number of sick bed days, illness symptom, and number of restricted activity days. Several variables are investigated in order to measure each of the aspects of the physical conditions. We specify the variables below.

First, as proxies for the episodes of illnesses, we choose the following three variables ; number of current disease, number of chronic disease, and illness during the last two weeks.

Second, the number of times seeking health care is investigated by te following variables ; number of visits to health institutions during the last two weeks, number of sick days during the last two weeks, and number of chronically sick days during the last two weeks.

Third, we choose the following three variables in order to measure the number of sick bed days of the retired workers ; the number of days in hospital during the last two weeks, number of days in hospital due to current disease during the last two weeks, and number of days in hospital due to chronic disease during the last two weeks.

Fourth, illness symptoms are measured by the following variables ; abnormal symptom in the medical examination, digestive condition, and respiratory condition.

Fifth, the number of restricted activity days are measured by the following variables ; number of sick days during the last six months, and uncomfortableness in daily activities.

(3) Economic Condition

Since the compulsory retirement is directily related with the loss of salaries and wages, it hurts the economic condition of the retired workers. Economec loss due to the reduction of income may be the fatalest aspect of the retirement. It includes health care costs increased by the deteriorating mental and physical health caused by the retirement. And it tends to be more severe for the workers retired at age 55 than the workers retired at age 60. Thus, in order to measure the economic condition of the retired workers, we choose the variable of annual income after retirement in millions of wons.

2) Control Variables

The primary purpose of the research is to investigate the mental, behavioral, physical and

economic impacts of early compulsory retirement in Korea. In this bivariate relationships, individual and family characteristics together with economic status of the retired workers may work as intermediate variables. The variables are used as independent variables in the multivariate analysis in the next section. Specifications of them are as follows :

As individual characteristics of the retired workers, we choose age, health status at the time of retirement, education level, and religion with the assumption that these characteristics do affect the mental, behavioral, physical, and economic conditions.

The old persons tend to suffer the mental and physical difficulties. Specifically ; it is anticipated that economic conditions of the retired workers are deteriorated with age. Thus, we can assume that age is negatively related with the mental, behavioral, physical, and economic conditions of the retired workers.

It can be conceived that a person with poor health status at the time of retirement has poor mental, physical and economic conditions after retirement. Education level and religion can also affect the mental, behavioral, physical and economic conditions of the retired workers. They are closely related with the will power to endure the difficulties.

Family characteristics such as spouse and the number of off-springs can affect the mental, physical and economic conditions of the retired workers. The direction of relationship in anticipated to be positive.

It can be thought that variables measuring the economic status (present employment, ownership of housing, annual income before retirement, and health care expenditure) are assoiated with the mental, behavioral, physical and economic conditions of the retired workers. Especially, they are directly related with the economic conditions.

3. Sampling of the Data

Among the retired workers at the age group of 60 to 64, 400 white color male workers retired at age 55 and 400 white color male workers retired at age 60 are selected for our sample. Each of the two age group of retirement is selected through stratified random sampling for the workers who are resident in Seoul area. Stratification is made by retirement system, and jobs within the same retirement system. About 50 percent of the sample is drawn from civil servants and the rest (50 percent) is drawn from private sector. In a comparative study such as this research, in general, more than 300 respondents for each of the group are thought to be needed to have a statistically significant power of estimation.

Questionnaire is used as research instruments for the research. It contains the items for the mental, behavioral, physical, and economic conditions together with individual, family characteristics and economic status of the respondents as defined in the previous section. Data is finally collected by interviewing respondents.

Ⅲ. Data Analysis

1. Factor Analysis

The research purposes to investigate the mental, behavioral, physical, and economic conditions of the retired workers. Specifically, we compare them between the group retired at age 55 and the group retired at age 60. Various proxies for the mental, behavioral, physical, and economic conditions of the retired workers are as defined in the previous section. To analyze for each of the variables, however, is too voluminous. Moreover, the variables may not specify independent dimensions.

Factor analysis provides a good breakthrough

in relation to this problem. The single most distinctive characteristics of factor analysis is its data reduction and summarization capability. Given an array of correlation coefficients for a set of variables, factor analytic techniques enable us to see whether some underlying pattern of relationships exists such that the data may be rearranged or reduced to a smaller set of factors or components that may be taken as source variables accounting for the observed interrelations in the data.

Using this factor analysis technique, we can identify the dimension of the mental and behavioral conditions and the physical conditions. With such reduced factors, one can analyze and compare the similarities and differences in the factors denoting the mental and behavioral conditions and the physical conditions of white color workers compulsorily retired at age 55 and workers retired at age 60.

To derive the factors for the variables denoting the mental and behavioral conditions, and the physical conditions, VARIMAX rotation method were used in this research. The VARIMAX criterion centers on simplifying the columns of a factor matrix. By simplifying the columns, we mean making as many values as possible in each column close to zero. Such a simplication is equivalent to maximizing the variance of the squared loadings in each column. This method of rotation is the most widely used, and it is opposite to QUARTIMAX criterion which simplifies the rows. The QUARTIMAX or OBLIQUE rotation method, however, shows, a similar result with respect to categorization of the variables.

Table 2 shows the result of the factor analysis for the 25 variables which are thought to measure the mental and behavioral conditions. The variables are selected with a priori knowledge that they represent feeling of well-being, self-confidence, spontaneity, daily activity pattern, and world-life outlook of the retired workers. The 25 variables are as defined in the previous section. Factor analysis assumes that perceptions of all respondants are identical, hence each component of factors is identical for all sample retired workers.

The factor analysis results for the variables denoting the mental and behavioral conditions of the retired persons are plausible. An exact quantitative basis for deciding the number of factors to extract has not been developed. However, the most commonly used technique, which is used in this research, is that only the factors having eigenvalues greater than one are considered to be significant. Eigenvalue is the total amount of variance accounted for by a factor by adding the square of the loadings in each column. As can be seen in Table 2, the number of factors which are greater than one in eigenvalues is seven. These seven factors accounted for 60.8 percent of the original variation in the variables.

In general, factor loadings greater than 0.30 or 0.40 are considered to be significant. But the criteria for the significance of factor loadings are flexible. Hair et al. (1979) stated as follows:[1]

(1) the larger the sample size is, the smaller the loading to be considered significant.

(2) the larger the number of variables being analyzed is, the smaller the loading to be considered significant, and

(3) the larger the number of factors is, the larger the size of the loading on later factors to be considered significant for interpretation.

With these in mind, this research takes the policy that all variables with factor loading greater than .40 are significant, but we include all of the variables in calculating factor scores.

The first factor accounts for 25.3 percent of

1. J, Hair et al. *Multivariate Data Analysis*,Tulsa, Oklahoma : Petroleum Publishing Co.,1979.

Table 2. Rotated factor matrix for the mental and behavioral conditions of the retired workers

Mental and Behavioral condition	Self-fulfilment	Optimism	Stress	Authori-tarianism	Sociality	Private Life	Perceived Prosperity
Benefit from public expenditure							.66674
Standard of living							.64180
Relationship with family members			.82304				
Tension in daily life			.73609				
Occupation of a room to oneself	.50784						
Contacts with family members	.81154						
Admission in health insurance	.80672						
Remainder of one's life	.63936						
Role satisfaction		.70413					
Worriment about home affairs						.67040	
Consciousness of health status	.68426						
Position in the family				.88869			
Desire for job						.51499	
Ability to work more	.65573						
Decision making in home affairs				.89843			
Community activity					.63362		
Political activity			.75157		.63462		
Position at the meetings							
Communication with friends						.50910	
Leisure time per week						.48821	.45319
Contacts with acquaintances					.63496		
Time spent at home per day					.46533		
View of the social life		.75487					
View of one's past life		.80176					
View of the rest of one's life		.84323					
Eigenvalues	6.31395	2.06882	1.91307	1.47259	1.21514	1.19590	1.02302
Percent of Variance	25.3	8.3	7.7	5.9	4.9	4.8	4.1

the total variance of the original correlation matrix and loads heavily on six variables. They include occupation of a room to oneself, frequency of contacts with the family members, admission in the health insurance, expectancy about the remainder of one's life, consciousness of one's health status, and ability to work more. This factor appears to measure the desire of the retired workers to work more and self-fulfill for the remainder of their lives and the ability to do these. For this reason, we named this factor as self-fulfilment.

The second factor accounts for additional 8.3 percent of the total variance of the original correlation matrix and loads heavily on four variables. They include role satisfaction, view of the social affairs, view of one's past life, and view of the rest of one's life. It can be easily seen that this factor measures whether the retired workers have optimistic point of view in their daily activities or not. For this reason, we named this factor as optimism.

The third factor accounts for additional 7.7 percent of the total variance of the original cor-

relation matrix and loads heavily on three variables. They include relationship with family members, tension in daily life, and position at the meetings. This factor appears to measure the stress of the retired workers received from daliy lives. For this reason, we named this factor as stress.

The fourth factor accounts for additional 5.9 percent of the total variance of the original correlation matrix and loads heavily on two variables. They include position in the family and desision making in the home affaires. This factor appears to measure how retired workers command authoritarian power in the home affaires. For this reason, we refer this factor as authoritarianism.

The fifth factor accounts for additional 4.9 percent of the total variance of the original correlation matrix and loads heavily on four variables. They include participation in community activities, participation in political activities, frequency of contacts with acquaintance, and time spent at home per day.This factor appears to measure the inclination to the social life of the retired workers. For this reason, this factor is referred as sociality.

The sixth factor accounts for additional 4.8 percent of the total variance of the original correlation matrix and loads heavily on four variables. They include worriment about home affairs, desire for job, communication with friends, and leisure time per week. It can be said that this factor measures the private life or personal affaires of the retired workers. For this reason, we named this factor as private life.

The seventh and the last factor accounts for additional 4.1 percent of the total variance to account for totally 60.8 percent of the variance of the original correlation matrix. This factor loads heavily on three variables. They include benefits from public expenditure, perception on the standards of living, and leisure time per week. The variable leisure time per week is also loaded on to factor personal affairs. This index appears to measure the perception (rather than the real status) about prosperity or economic status of the retired workers. For this reason, this factor is named as perceived prosperity.

For the proxies for the mental and behavioral conditions of the retired workers, we have initially grouped into five groups ; feeling of well-being, self-confidence, spontaneity, daily activity patterns, and world-life outlook. However, the result of the factor analysis indicates that there exist seven dimensions of the mental and behavioral conditions.

As a next step, we calculated factor scores for the seven factors for the mental and behavioral conditions of the retired workers. They are composite scales which represent the theoretical dimensions associated with the respective factors. The factor scores for the individual data cases are calculated from the factor score coefficient matrix. When principal component analysis is being performed (which is being used in this research), exact. factor score coefficients can be calculated from the rotated factor pattern matrix. The factor score coefficient matrix F is thus ;

$$F = (A\ ^{T}A)^{-1}AT,$$

where A is the rotated factor pattern matrix and A^{T} is the transpose of A. A factor score is then built for each factor as follows :

$$f = F_{z},$$

where F is the factor score coefficient matrix and z is the vector of standardized values of the variables which have been factor analyzed.

An analysis similar to the above is performed for the proxy variables for the physical conditions of the retired workers. Table 3 contains the re-

Table 3. Rotated factor matrix for the physical conditions of the retired workers

Physical conditions	Chronic Disease	Current Disease	Restricted Activity
Number of current disease		.78603	
Number of chronic disease	.80584		
Illness during the last two weeks		.70479	
Visits to medical institutions		.56054	.47928
Number of sick days during the last two weeks		.65887	.44891
No. of chronic sick days for the last 2 weeks	.79008		
No. of days in hospital for the last 2 weeks			.70731
No. of days in hospital due to current disease			.70985
No. of days in hospital due to chronic disease			.61193
Abnormal symptom in the medical examination	.66617		
Digestive condition	.63532	.55929	
Respiratory condition	.64143	.56142	
No. of sick days during the last six months	.69065		.40587
Uncomfortableness in daily activities	.72629	.42589	
Eigenvalues	6.60452	1.159468	1.15326
Percent of Variance	47.2	11.4	8.2

sult of factor analysis for the 14 variables. As can be seen, the number of factors which are greater than one in eigenvalues is three. These three factors accounts for 66.8 percent of the original variation in the variables.

The first factor accounts for 47.2 percent of the total variance of the original correlation matrix and loads heavily on seven variables (with factor loadings greater than 0.40). They include number of chronic disease, number of chronic sick days during the last two weeks, abnormal symptom in the medical examination, digestive condition, respiratory condition, number of sick days during the last six months, and uncomfortableness in daily activities. The variables in this factor are closely associated with chronic disease of the retired workers. Thus, we name this factor as chronic disease.

The second factor accounts for additional 11.4 percent of the total variance of the original correlation matrix and loads heavily on seven variables. They include number of current disease, illness during the last two weeks, number of visits to medical institutions during the last two weeks, number of sick days during the last two weeks, digestive condition, respiratory condition, and uncomfortableness in daily activities. The variables in this factor are closely associated with current disease of the retired workers. However, variables denoting digestive condition, respiratory condition, and uncomfortableness in daily activities are also heavily loaded on the factor chronic disease. For this reason, we refer this factor as current disease.

The third and the last factor accounts for additional 8.2 percent of the total variance to account for totally 66.8 percent of the variance of the original correlation matrix. This factor loads heavily on six variables. They includes number of visits to medical institutions during the last two weeks, number of sick days during the last two weeks, number of days in hospital due to current disease during the last two week, number of days in hospital due to chronic disease

during the last two weeks, and number of sick days during the last six months. The variables in this factor seems to measure the restriction in the daily activities of the retired workers. Therefore, this factor is named as restricted activity.

For the proxies for the physical conditions of the retired workers, we have initially grouped into five groups ; number and types of illness, number of times seeking health care, number of bed days, illness symptom, and number of restricted activity days. However, the result of the factor analysis indicates that there exist three dimensions of the physical conditions.

For the above three factors of the physical conditions of the retired workers, factor scores are calculated in a manner similar to those for the factors of the mental and behavioral conditions. The factor scores will be used in the next section as composite scale representing the theoretical dimensions associated with the respective factors.

2. Mental, Physical, and Economic Impacts of Early Compulsory Retirement : A Bivariate Analysis

We have identified seven factors for the mental and behavioral conditions, and three factors for the physical conditions of the retired workers in the previous section. We investigate the impacts of early compulsory retirement on the ten factors together with the economic conditions of the retired workers. In this bivariate analysis, we assume that other things equally affect in this relation.

(1) Mental and Behavioral Conditions

We have previously categorized the mental and behavioral conditions of the retired workers into seven factors ; self-fulfilment, optimism, stress, authoritarianism, sociality, private life, and perceived prosperity. For each factor of the mental and behavioral conditions of the retired workers, Table 4 compares the means of the factor score between the group retired at age 55 and the group retired at age 60. The results are, in general, consistent with the hypothesis that the early compulsory retirement have negative impacts on the mental and behavioral conditions of the retired workers.

The mean of the factor scores of the factor self-fulfillment for the group retired at age 55 is 0.1784 and the mean of the factor score for the group retired at age 60 is -0.1784. The difference in the means of the factor scores between the two groups is statistically significant. T-value for the difference is 5.1236 with the p-value of .0000. One thing to notice here is that the mean of the factor scores of the two groups are the same in absolute value with the opposite sign. It results from the fact that the factor score is calculated by multiplying the factor score coefficient matrix and the vector of standardized values of the variables which have been factor analyzed, and the fact that the two age groups have the same sample size 400.

The result for the factor self-fulfillment indicates that the group retired at age 55 have strong desire to work more and self-fulfillment for the remainder of their lives and show their ability to do these.

The mean of the factor scores of the factor optimism for the group retired at age 55 (-0.2461) is statistically significantly smaller than the mean of the factor score for the group retired at age 60 (0.2451) at 0.01 level. The result for the factor optimism indicates that the group retired at age 55 is more pessimistic than the group retired at age 60, a result consistent with our hypothesis.

We have hypothesized that the workers retired at age 55 have more stress in their daily lives

Table 4. Classifications of the mental, physical and economic conditions of the retired workers by the age group of retirement

Variables	Age Group of Retirement		T-values	p-values
	Retired at 55	Retired at 60		
Self-fulfilment	.1784*	-.1784	5.1236	.0000
	1.0081	.9604		
Optimism	-.2461	.2461	7.1785	.0000
	.9566	.9829		
Stress	-.0561	.0561	1.5873	.1128
	.9633	1.0336		
Authoritarianism	.0770	-.0770	2.1818	.0294
	.9553	1.0383		
Sociality	.2017	-.2017	5.8205	.0000
	1.0777	.8714		
Private Life	-.3038	.3038	9.0141	.0000
	1.0159	.8862		
Perceived Prosperity	-.1046	.1046	2.9735	.0030
	1.0770	.9059		
Chronical Disease	.1039	-.1039	2.9533	.0032
	1.0864	.8948		
Current Disease	.1131	-.1131	3.2173	.0013
	1.1359	.8286		
Ristricted Activity	.0226	-.0226	.6397	.5225
	1.0173	.6397		
Economic Condition S	2.5125	2.8600	4.4209	.0000
	1.1590	1.0622		
Sample Size	400	400		

* : The mean of the factor scores with the standard deviation below for each factors.

than the workers retired at age 60. As can be seen from the table, however, the level of stress is not statistically different between the two age group of retirement. One explanation for this result might be that the variables measuring the level of stress of the retired workers are not correctly selected. Further research is required.

The mean of the factor scores of the factor authoritarianism for the group retired at age 55 is 0.0770 and the mean of the factor score for the group retired at age 60 is -0.0770. The difference in the means of the factor scores between the two groups is statistically significant. T-value for the difference is 2.1818 with the p-value of .0294. The result for the factor authoritarianism indicates that the workers retired at age 55 command more authoritarian power in the home affairs than the workers retired at age 60.

The result for the factor sociality is not consistent with our a priori knowledge. The mean of the factor scores of the factor sociality for the group retired at age 55 (0.2017) is significantly smaller than the mean of the factor score for the group retired at age 60 (-0.2017) at 0.01 level. The result may imply that, due to the increase in the alienation and instability in daily lives, the workers retired at age 55 have greater

inclination to the social activity.

The results for the factors private life and perceived prosperity also support our hypothesis. The workers retired at age 60 enjoy more time for themselves and perceive them to be economically better off.

In sum, the results are, in general, consistent with the hypothesis that the early compulsory retirement have negative impacts on the mental and behavioral conditions of the retired workers.

(2) Physical Factors

In the previous chapter, we have categorized the physical conditions of the retired workers into three factors ; chronic disease, current disease, and restricted activity. Table 4 compares the means of the factor scores for each factor of the physical conditions between the group retired at age 55 and the group retired at age 60.

The mean of the factor scores of the factor chronic disease for the group retired at age 55 is 0.1039, while the mean of the factor scores for the group retired at age 60 is -0.1039. The difference in the means of the factor scores between the two age groups of retirement is statistically significant. T-value for the difference of the mean is 2.9533 with the p-value of 0.0032. The result indicates that early compulsory retirement induces the retired workers to get more chronic disease.

Similar result can be found for the factor current disease. As can be seen from the table, the workers retired at age 55 suffer current disease more severely than the workers retired at age 60.

However, early compulsory retirement seems to have nothing to do with the factor restricted activity. The means of the factor score for the factor restricted activity is not statistically different between the two age group of retirement. T-values for the difference in the means is 0.6397 with the p-value of 0.5225.

In sum, the results are consistent with the hypothesis that the white color workers retired at age 55 have poorer physical conditions (thus have more tendency to get sick) than the workers retired at age 60, other things being equal. The former have more chronic and current disease than the latter. However, restriction in the daily activity is not different between the two age group of retirement.

(3) Economic Condition

We measure the economic condition of the retired workers by the annual income after retirement. As can be seen from the last row of Table 4, the mean annual income after retirement for the workers retired at age 55 is 2.5125 million wons, while that for the workers retired at age 60 is 2.8600 million wons. The difference in the mean annual income between the two age group of retirement is statistically significant. T-value for the difference is 4.4209 with the p-value of .0000. The result indicates that early compulsory retirement urges retired workers to suffer more needy lives.

3. Impacts of Intermediate Variables

In the previous section, we have investigated the mental, behavioral, physical and economic impacts of early compulsory retirement in Korea. In this bivariate relationships, individual and family characteristics together with economic status of the retired workers may work as intermediate variables. Thus, we illustrate the bivariate relationships between each of the mental, behavioral, physical and economic conditions of the retired workers and each of the intermediate variables. T-statistic and F-statistic resulting from the analysis of variance (ANOVA) are used for statistical hypothesis testings. Table 5 contains

Table 5. Classifications of the mental, physical and economic conditions of the retired workers by the intermediate variables.

	Age					
	60	61	62	63	64	F-values (p-values)
Self-fulfillmemt	.1111*	.1831	−.1499	−.1212	−.1066	4.5270
	1.0245	.9915	.9793	.9458	1.0375	(.0013)
Optimism	−.1234	.0582	.0341	−.1051	.0291	1.0293
	.9744	1.0088	1.0066	.9773	1.0158	(.3911)
Stress	−.2443	.0583	.0740	−.0848	.0426	2.3816
	1.1043	.9957	.9770	.9323	.9958	(.0501)
Authori-tarianism	.0463	.0497	−.0557	.0007	−.0529	.4561
	.9417	1.0446	1.0228	.9428	.9618	(.7680)
Sociality	−.2263	.0365	−.0626	.1219	.1613	2.7244
	.8500	1.0428	.9562	1.0861	.9941	(.0285)
Private Life	−.1360	.0994	.1386	−.0860	−.3560	5.4762
	1.0599	.9531	1.0237	.9037	1.0174	(.0002)
Perceived Prosperity	−.2503	−.0875	.0848	.1411	.1394	3.6375
	1.0915	1.0556	.9225	.9372	.9362	(.0060)
Chronical Disease	.2545	.0345	−.0405	−.1066	−.1521	2.7747
	.8722	.9783	.9661	1.1121	1.0886	(.0262)
Current Disease	.0841	.0606	−.0113	−.0936	−.1177	1.0035
	1.0427	.8926	1.0154	1.1341	1.0120	(.4048)
Ristricted Activity	−.1021	−.0027	.0353	−.0132	.0537	.4189
	.8273	.9591	1.0738	1.0707	1.0205	(.7951)
Economic Condition	2.7453	2.7137	2.6609	2.6496	2.6522	.1919
	1.2878	1.0197	1.0397	1.2616	1.2353	(.4916)
Sample Size	106	255	230	117	92	

	Health Status at the Time of Retirement				
	bad	medium	good	F-values	p-values
Self-fulfilment	−.5541	−.0530	.4313	54.9277	.0000
	.9707	.9731	.8606		
Optimism	.0079	−.0898	.1337	3.8524	.0216
	.8806	.9498	1.1269		
Stress	−.5155	.0781	.2047	29.5614	.0000
	1.0195	.9163	1.0056		
Authoritarianism	−.2013	.0485	.0522	4.0508	.0178
	.9692	1.0031	1.0023		
Sociality	−.3353	.1116	.0394	11.8711	.0000
	.8961	1.0330	.9676		
Private Life	−.2160	.0871	.0018	5.2380	.0055
	1.2546	.9253	.9098		
Perceived Prosperity	−.1629	.1109	−.0684	5.1409	.0060
	1.0408	.9626	1.0142		

Table 5. (Continued)

	Health Status at the Time of Retirement				
	bad	medium	good	F-values	p-values
Chronical Disease	−.7509 1.2008	.1023 .8799	.3158 .7780	69.6303	.0000
Current Disease	−.3769 1.2137	.0443 .9548	.1695 .8514	15.8594	.0000
Ristricted Activity	−.4341 1.5288	.1573 .7901	.0311 .7670	20.9077	.0000
Economic Condition	2.0692 1.3739	2.6684 1.0257	3.1032 .8911	45.9625	.000
Sample Size	159	389	252		

	Education Level				
	below middle school	middle school	above middle school	F-values	p-values
self-fulfilment	−.4272 1.0236	−.0184 .9072	.5914 .8701	59.4131	.0000
Optimism	−.2078 .8482	−.0567 .9729	.3940 1.1286	20.2250	.0000
Stress	−.2219 .8616	−.0069 .9333	.3013 1.2153	14.1052	.0000
Authoritarianism	−.1184 .9676	−.0329 .9957	.2259 1.0203	6.4136	.0017
Sociality	.0636 .9751	.0012 1.0326	−.0846 .9561	1.0950	.3350
Private Life	−.2028 1.0436	.0135 1.0448	.2311 .7643	9.6533	.0001
Perceived Prosperity	.1306 .9688	.0364 1.0184	−.2495 .9592	7.8503	.0004
Chronical Disease	−.1468 1.0586	−.0628 1.0185	.3292 .7914	13.2170	.0000
Current Disease	−.1573 1.0669	.0181 1.0051	.1622 .8666	5.2679	.0053
Ristricted Activity	−.1022 1.2296	.0811 .9047	−.0493 .8525	2.7163	.0667
Economic Condition	2.1535 1.3101	2.7215 1.0017	3.2938 .7336	59.1289	.0000
Sample Size	228	395	177		

Table 5. (Continued)

	Religion			
	have not	have	T-values	p-values
Self-fulfilment	−.1071 1.0025	.0954 .9892	2.8719	.0042
Optimism	−.0029 .9851	.0026 1.0142	.0761	.9392
Stress	−.0157 1.0246	.0140 .9786	.4189	.6754
Authoritarianism	−.0528 .9854	.0471 1.0117	1.4115	.1585
Sociality	−.0007 .9903	.0006 1.0097	.0200	.9847
Private Life	.0438 .9983	−.0390 1.0011	1.1692	.2426
Perceived Prosperity	−.0472 .9326	.0421 1.0558	1.2609	.2077
Chronical Disease	−.0523 .9984	.0466 1.0003	1.3635	.1630
Current Disease	.0040 .9622	−.0035 1.0336	.1053	.9160
Ristricted Activity	.0258 1.0076	−.0230 .9938	.6881	.4916
Economic Condition	2.4854 1.2162	2.8652 1.0039	4.8356	.0000
Sample Size	377	423		

	Spouse			
	have not	have	F-values	p-values
Self-fulfilment	−.1359 .9922	.0756 .9973	2.8812	.0041
Optimism	−.0499 .9511	.0277 1.0261	1.0522	.2930
Stress	−.0397 1.0250	.0221 .9861	.8376	.4025
Sociality	−.1784 .9060	.0993 1.0363	3.7958	.0002
Private Life	.0089 1.0219	−.0050 .9886	.1884	.8506
Authoritarianism	−.0689 1.0280	.0383 .9503	1.4539	.1464
Perceived Prosperity	.0068 1.0296	−.0038 .9842	.1442	.8853

Table 5. (Continued)

	Spouse			
	have not	have	F-values	p-values
Chronical Disease	−.0777 .9893	.0432 1.0043	1.6404	.1013
Current Disease	−.1100 1.0647	.0612 .9577	2.3264	.0202
Ristricted Activity	.0298 1.0487	−.0166 .9725	.6287	.5297
Economic Condition	2.4476 1.3308	2.8191 .9675	4.5331	.0000
Sample Size	286	514		

	Number of Offsprings						
	0	1	2	3	4	5	F-values (p-values)
Self-fulfilment	.793 0	.609 .999	.251 1.002	−.025 .942	−.030 .968	−.444 1.159	6.1570 (.0000)
Optimism	−.988 0	.403 1.241	.131 1.092	−.051 .952	−.044 .987	.037 .977	1.4603 (.2005)
Stress	.954 0	.293 .842	−.032 1.021	.203 .979	−.022 1.006	−.008 1.064	.3340 (.8925)
Authori-tarianism	.708 0	.208 .922	.018 1.009	.031 1.005	−.043 .991	−.063 1.018	.4468 (.8158)
Sociality	.552 0	.348 1.107	−.044 .965	.048 .961	−.011 1.042	−.149 1.056	.9322 (.4593)
Private Life	.594 0	−.171 .821	.034 .951	.049 1.027	−.011 .987	−.220 1.052	1.0360 (.3951)
Perceived Prosperity	−.786 0	−.367 1.008	−.002 .986	.074 .963	−.032 1.047	−.111 1.005	1.0706 (.3752)
Chronical Disease	.393 0	.535 .892	.068 .977	.052 .945	−.117 1.049	−.050 1.078	1.8986 (.0923)
Current Disease	.491 0	−.289 1.189	−.002 1.016	.072 .942	−.026 .989	−.162 1.189	1.0138 (.4083)
Ristricted Activity	.130 0	−.285 1.268	−.130 1.079	.008 .972	.076 .994	.015 .896	1.0500 (.3870)
Economic Condition	2.000 0	2.785 1.050	2.886 1.006	2.659 1.167	2.644 1.109	2.521 1.217	1.4661 (.1985)
Sample Size	1	14	150	305	259	71	

Table 5. (Continued)

	Present Employment			
	unemployed	employed	T-values	P-values
Self-fulfilment	−.1781 .9732	.5451 .8784	9.2697	.0000
Optimism	−.0403 .9656	.1223 1.0921	1.9963	.0462
Stress	−.0938 .9353	.2871 1.1313	4.7025	.0000
Authoritarianism	−.0907 .9875	.2776 .9893	4.5431	.0000
Sociality	.0616 1.0080	−.1884 .9533	3.0623	.0023
Private Life	−.0094 1.0267	.0287 .9153	.4634	.6432
Perceived Prosperity	.1906 .9074	−.5833 1.0459	9.9967	.0000
Chronical Disease	−.0885 1.0342	.2710 .8329	4.4323	.0000
Current Disease	−.0348 1.0106	.1066 .9614	1.7262	.0847
Ristricted Activity	.0085 1.0329	−.0261 .8939	.4222	.6730
Economic Condition	2.5041 1.1548	3.2437 .8028	8.3516	.0000
Sample Size	603	252		

	Health Care Expenditure			
	no	yes	T-values	p-values
Self-fulfilment	−.5553 1.0951	.0951 .9644	6.6757	.0000
Optimism	−.1964 .6931	.0336 1.0402	2.3056	.0214
Stress	−.3526 1.1789	.0604 .9540	4.1698	.0000
Authoritarianism	−.0075 .9218	.0013 1.0134	.0883	.9299
Sociality	−.2058 .8687	.0353 1.0172	2.4167	.0159
Private Life	−.1848 1.0959	.0317 .9800	2.1679	.0305
Perceived Prosperity	−.1759 .9830	.0301 1.0005	2.0638	.0394

Table 5. (Continued)

	Health cave Expenditure			
	no	yes	T-values	p-valus
Chronical Disease	−1.1114 1.2075	.1904 .8218	14.6457	.0000
Current Disease	−.9114 1.3760	.1561 .8262	11.5137	.0000
Ristricted Activity	−.9146 1.6994	.1567 .7157	11.5620	.0000
Economic Condition	1.8547 1.3213	2.8287 1.0224	9.0884	.0000
Sample Size	117	683		

	Ownership of Housing				
	monthly rent	rent by basis money	owning	F-values	p-values
Self-fulfilment	−.9274 .9111	−.5809 1.0142	.2381 .8890	72.8966	.0000
Optimism	−.3195 .3826	−.0294 .9433	.0271 1.0382	1.9314	.1456
Stress	−.3300 1.1534	−.2272 .9399	.0913 .9961	9.1726	.0001
Authoritarianism	.0630 .9661	.0027 .9958	−.0044 1.0047	.0695	.9329
Sociality	−.1371 .8542	.1480 .9358	−.0401 1.0237	2.8277	.0597
Private Life	−.5015 1.0289	−.3388 1.0791	.1367 .9370	21.2007	.0000
Perceived Prosperity	−.4029 1.2639	−.0129 1.0301	.0263 .9707	2.8275	.0598
Chronical Disease	−.4759 1.0441	−.1005 1.0543	.0586 .9714	5.6283	.0037
Current Disease	−.3506 1.1203	−.1932 1.1503	.0812 .9278	7.4564	.0006
Ristricted Activity	.3127 .6488	−.0954 1.1788	.0135 .9492	2.4769	.0847
Economic Condition	1.2500 1.3440	2.2086 1.3256	2.9191 .9156	64.2062	.0000
Sample Size	32	187	581		

Table 5. (Continued)

	Annual Income before Retirement					F-values	p-values
	2	4	5	6	7		
Self-fullfilment	−.670 1.264	−.413 1.074	−.086 1.010	.074 .972	.380 .962	3.8118	.0045
Optimism	−.829 .351	−.464 .480	−.084 .972	.111 1.031	.069 1.050	3.2862	.0110
Stress	−.138 .340	−.428 .831	−.038 .934	.055 1.024	.084 1.371	1.4162	.2267
Authoritarianism	1.475 .104	−.405 .848	−.033 .988	.049 1.001	.002 1.110	2.2489	.0622
Sociality	−.720 .009	.029 1.095	.063 1.051	−.037 .953	−.240 .844	1.3714	.2421
Private Life	−.678 .192	−.514 1.210	−.072 .969	.094 1.008	.118 1.009	3.0258	.0172
Perceived Prosperity	−.055 .534	.274 .906	−.030 1.036	.020 .964	−.028 1.040	.5101	.7283
Chronical Disease	−2.275 .785	.120 .973	−.087 .999	.027 .999	.613 .651	7.5391	.0000
Current Disease	.502 1.004	.138 1.139	−.115 .996	.057 1.006	.466 .713	4.0647	.0029
Ristricted Activity	.759 .081	−.374 1.508	.079 .961	−.034 1.025	−.280 .726	2.2501	.0399
Economic Condition	3.000 0	1.850 1.182	2.246 1.050	3.025 .955	4.170 .738	55.0097	.0000
Sample Size	2	20	378	359	41		

* : The mean of the factor scores with the standard deviation below for each factors.

the results for each intermediate variables.

As individual characteristics of the retired workes, we consider age, health status at the time of retirement, education level, and religion.

The results for the age are somewhat mixed. The older persons tend to desire less self-fulfillment and private life, but desire more social life and perceive themselves to be economically prosperous. Optimism, stress, and authoritarianism are not affected by age of the retired workers. As for the physical conditions, the results indicate that the older a person is, the more chronic disease he suffers, a result consistent with a priori knowledge. The other physical conditions are not affected by age. The economic condition of the retired workersis shown not to be deteriorated with age.

The other variables denoting the individual characteristics of the retired workers show similar results. They are, in general, positively related with the factors self-fulfillment, optimism, stress, authoritarianism, chronic disease, current disease, and economic condition. The relations with the other factors are not clearly identifiable.

Family characteristics such as spouse and the number of off-springs also affect the mental, physical and economic conditions of the retired workers. The old persons with spouse have more digree of self-fulfillment and authoritarianism as for the behavioral conditions, and spend their lives in a better economic condition. As the number of off-springs increases, the level of self-

fulfillment significantly decreases. The other mental, physical, and economic conditions of the retired workers are not affected by the family characteristics.

We investigate the variables present employment, ownership of housing, annual income before retirement, and health care expenditure in order to measure te economic status of the retired workers. Table 5 shows that, in general, the intermediate variables denoting the economic status of the retired workers are positively related with the factors self-fulfillment, optimism, stress, authoritarianism, private life, chronic disease, current disease, and economic condition. However, the factors sociality and perceived prosperity are affected by present employment and health care expenditure in a opposite direction.

4. Multivariate Analysis on Early Compulsory Retirement

In the previous sections, we have investigated the bivariate relationships between each of the mental, behavioral, physical, and economic conditions of te retired workers and the age group of retirement, under the hypothesis that oter things are equal. As we have examined, however, it is not the case. Individual are family characteristics and economic status of the retired workers affect in this bivariate relationships. In order to sort out the pure impacts of the retirement age upon the mental, behavioral, physical, and economic conditions of the retired workers, multivariate analysis is performed. Multiple regression analysis, which we are to use in this section, fits to our purpose very well among others. This type of methodology enables us to control for the effects of the intermediate variables.

One of the assumptions of the classical multiple regression model is that there exists no exact linear relationship between the independent variables in the model. Multicollinearity arises when two or more variables are highly but not perfectly correlated with each other. To investigate this possibility, we calculated the pearson correlation coefficients between each of intermediate variables and the age group of retirement. The variables are used as independent variables in the multiple regression analysis. Table 6 contains the results. As can be seen, the independent variables are not highly correlated with each other, indicating no severe problem of

Table 6. Pearson correlation coefficients between the intermediate variables

	Age	Religion	Education	Spouse	Health Care Expen.	No. of Offspring	Age Group	Health at Retire.	Housing Ownership	Income before Retire.	Present Job
Age											
Religion	-.013										
Education	-.035	-.014									
Spouse	-.092	.001	.091								
Health Care Expen.	-.093	.027	.182	.126							
No. of Offsprings	.115	.031	-.204	-.009	-.037						
Age Group of Ret.	.061	-.002	.234	.056	.010	-.008					
Health at Ret.	.039	.066	.226	.052	.363	-.078	-.076				
Housing Ownership	-.160	-.019	.383	.054	.242	-.133	.098	.150			
Income before Ret.	.051	.040	.393	.013	.089	-.081	.294	.136	.214		
Present Job	-.195	.080	.440	.008	.138	-.134	-.002	.349	.196	.162	

Table 7. Multiple regression results of the mental, physical and economic conditions of the retired workers.

D.V.	Const.	Age	Religion	Education	Spouse	Health Care Expen.	No. of Offspring	Age Group	Health at Ret.	Housing Ownership	Income before Ret.	Present Job	R^2	F
Self-fulfilment	-.998	-.018	.170**	.288**	.112	.105	-.073*	-.483**	.266**	.482**	.027	.173*	.345	37.877
Optimism	-.279	-.003	.015	.225**	.027	.136	-.015	.436**	.040	-.068	-.020	-.023	.089	7.005
Stress	-3.979	.049	.003	.122*	.015	.134	.030	.095	.243**	.144*	-.054	.150	.088	6.919
Authori-tarianism	.039	-.002	.075	.136*	.274**	-.117	-.014	-.192**	.031	-.121	.022	.273**	.060	4.611
Sociality	-3.453	.060	.003	.047	-.026	.215*	-.060	-.401**	.164**	-.063	-.011	-.371**	.086	6.745
Privatate Life	2.996	-.066*	-.061	.046	.050	-.004	-.012	.590**	.116*	.309**	-.032	-.162	.142	11.886
Perceived Prosperity	-4.206	.060*	.142	-.132*	-.023	.194	-.068	.235**	.166**	.243**	-.001	-.854**	.176	15.303
Chronic Disease	3.631	-.081**	.048	.011	-.022	1.063**	-.048	-.225**	.316**	-.103	.073	-.004	.279	27.800
Current Disease	1.087	-.040	-.029	-.004	.058	.960**	-.004	-.211**	.098	.037	.050	-.062	.162	13.921
Ristrictive Activity	-2.038	.031	-.063	.083	-.147*	1.159**	.069	-.010	.038	-.150*	-.139*	-.131	.175	15.240
Economic Condition	-4.276	.026	.317**	.063	.270**	.443**	.009	.095*	.219**	.441**	.525**	.263**	.330	45.877

* : significant at 0.05 level.
** : significant at 0.01 level.

multicollinearity.

We run the regressionn of each mental, physical, and economic conditions on the intermediate variables and the age group of retirement. The age group of retirement is a dummy variable denoting one if one retires at age 60, and zero otherwise. Table 7 shows the regression results.

The first equation of the table contains the results for the factor self-fulfillment. As in the bivariate analysis, the coefficient of age group is significantly negative. It indicates that the workers retired at age 55 have more disire for self-fulfillment than the workers retired at age 60. The factor self-fulfillment is significantly and positively related with religion, education, health status at retirement, and housing ownership, but is negatively related with the number of off-springs. The coefficients for the intermediate variables age, anual income before retirement, health care expenditure, and present employment are not statistically different from zero. The results in this regression analysis are inconsistent with those in the bivariate analysis.

As for the factor optimism, the coefficients for education and age group of retirement are significantly positive, while the coefficients for the other independent variables are not statistically different from zero. It indicates that the workers retired at age 60 and more educated have optimistic view in their daily lives.

Consistent with the result in the bivariate analysis, the factor stress is shown not to be affected by the retirement age, but is affected by the level of education, health status at retirement, and housing ownership.

The coefficient of the age group of retirement has negative sign for the factors authoritarianism and sociality. While education level and spouse have additional explanational power for the factor authoritarianism, health care expenditure and health status at retirement expains the factor sociality. Present employment affect the two factors differently.

The factors private life and perceived prosperity are positively related with the age group of retirement, health status at retirement, and housing ownership. The coefficient of age is significantly different from zero, but the sign of it is opposite for the two factors. Religion, education level, and present employment also affect the factor perceived prosperity.

Physical factors chronic disease and current disease show similar regression results. They are positively related with the health care expenditure and negatively related with the age group of retirement. As for the factor chronic disease, the coefficients for the independent variables age and health status at retirement are also significantly different from zero, but with opposite sign from each other.

The factor restricted activity is negatively related with spouse, housing ownership, and annaul income before retirement, but is positively related with health care expenditure. As in the bivariate analysis, the coefficient of the age group of retirement is not statistically different from zero.

As for economic condition, the coefficients of the independent variables religion, health care expenditure, number of off-springs, age group of retirement, health status at retirement, housing ownership, annual income before retirement, and present employment are significantly positive. The coefficient of determination (R^2) of this equation is 0.390, which is the largest among all regression equations, indicating that the economic condition is best explained by the model.

In sum, compared with the results in the bivariate analysis, the results in the multiple regression are somewhat different in the case of the intermediate variables. However, the results for the age group of retirement are not significantly altered. Consistent with our hypothesis, early compulsory retirement has negative impacts

on the mental, behavioral, and physical conditions of the retired workers.

Ⅳ. Conclusions and Policy Implications

Most studies conducted in Korea of its compulsory retirement system have been about the economic plight of the retired workers and the implications of wasted manpower. To a lesser extent, the physical conditions of the retirees have also been studied. However, there has been no systematic study of the mental and behavioral impacts of compulsory retirement system in Korea. The research have investigated the impacts of early compulsory retirement upon the mental, behavioral, physical and economic conditions of the retired workers.

From the various dependent variables specified in this research, we identify the real dimension of the mental, behavioral, and physical conditions of the retired workers. Factor analytic technique is used in this case. From the variables denoting the mental and behavioral conditions, we identify seven factorst ; self-fulfillment, optimism, stress, authoritarianism, sociality, private life, and perceived prosperity. And three factors (chronic disease, current disease, and restricted activity) are identified from the physical conditions.

For these factors togeter with the economic condition of the retired workers, we statistically analyze and compare the similarities and differences between the group retired at age 55 and the group retired at age 60. Impacts of the intermediate variables upon the factors are also considered. Results of the bivariate and multivariate analysis are generally consistent with our hypothesis. Early compulsory retirement exerts negative impacts upon the mental, behavioral, physical, and economic conditions of the retired workers.

It is hoped that the result of the study would awaken the public and policy makers to the fact that compulsory retirement system at age 55 is detrimental not only to economic development but also to the health and well-being of those forced to retire. An increased awareness of this fact would fasten the day when compulsory retirement age is raised or better still abolished in Korea.

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