

# Age Groups, Psychosocial Factors, and the Trajectories of Depression in the US

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This study aims to examine the difference in the trajectories of depressive symptoms between older adults (60 years old and older) and younger adults (18 to 59 years old), taking into account psychosocial factors as mediators to explain the potential difference. A form of CES-D is used to measure depressive symptoms. This study employs latent growth-curve modeling to examine the trajectories of depression using panel data (1995-2001) based on a national telephone probability sample of 2,592 adults in the United States. The results indicated that, over time, older adults have worse change in depression than younger adults. Changes in economic hardship, daily work fulfillment, and perceived control play important roles in explaining the difference between older and younger adults. Older adults experience a greater increase in depression than younger adults due to the fact that their relative changes in economic hardship, fulfilling work quality, and perceived control are more negative than those of younger adults. These results highlight the importance of studying depression changes among older adults and the roles of psychosocial factors in such changes.

Key words: CES-D, Panel Data, Older Adults, Latent Growth-curve Model

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\* 본 연구는 고려대학교 특별연구비에 의하여 수행되었음.

\*\* 유익한 논평을 해주신 익명의 논평자 분께 감사 드린다.

■ 투고일: 2010. 3. 12     ■ 수정일: 2010. 5. 19     ■ 게재확정일: 2010. 5. 24

## I . Introduction

This study seeks to develop a more accurate understanding of depression in older adults. What kinds of characteristics differentiate younger adults from older adults in regard to depression? What kinds of mechanisms can explain the potential differences in depression by age group? Using longitudinal data and growth-curve modeling, this study focuses on the trajectories of depression over time. To examine depression changes over time, comparing older adults to younger adults, will provide a rich understanding of depression among the elderly. In order to understand the mechanisms of potential age group differences in regard to depression, this study considers several essential psychosocial factors as mediators.

Conflicting research results have led to debates about whether older adults suffer from depression more often than younger adults (Newmann, 1989; Feinson, 1985). The limited age range of existing research samples, different measures of depression, and assumptions about the linear relationship between age and depression may have brought about such conflicting results in previous studies. Moreover, many survey samples tend to exclude the most depressed elderly due to their high rates of death, institutionalization, and incapacitation. Depression in older adults is not revealed easily in those studies that only consider major clinical depression (Newmann, 1989). For example, in the case of clinical depression, some elderly persons – fearing lowered respects – may try to hide their depressed mood (Haug, Belgrave, & Gratton, 1984). As a result, depression in older adults may be more serious than that demonstrated in previous research. According to Bruce and Leaf (1989), approximately 15 to 30% of the elderly suffer from minor depression, which can affect mortality. Mirowsky and Ross (1992) assert that depression among the old is not a myth; the malaise of the old mainly reflected depression not physical diseases.

Mirowsky and Ross (1992) suggested that a U-shaped curve exists in the relationship between age and depression; depression reaches its lowest point during middle age. According to the authors' cross-sectional analyses, this curve reflects lifecycle gains and

losses in the form of marriage, employment, and economic well-being. Consequently, older adults suffer from depression more than middle-aged adults, and the depression of older adults tends to increase with age because of lifecycle losses such as retirement, spouse's death, and physical/cognitive decline.

Based on these findings, the present study uses three-wave longitudinal data from 1995 to 2001 and latent growth-curve modeling to examine the trajectories of depressive symptoms. A couple of recent studies utilized panel data and growth-curve modeling to examine the relationship between age and depression, although one examined depression trajectories only among older adults. The study considered several sociodemographic factors to explain increasing depression among older adults with a community sample (Yang, 2007). However, the study failed to compare younger adults with older adults, which is important for understanding why the elderly show worse trajectories in depression than the non-elderly. Other studies which examined the relationships between psychosocial factors or physical functioning and depression change, also used samples of limited age groups such as middle-aged adults (Dush, Taylor, & Kroeger, 2008) or older adults (Yang, 2006).

Meanwhile, although one study encompassed all adult age groups to examine the difference in depression across age groups, it did not examine psychosocial mediating factors to explain the differential depression trajectories across age groups (Mirowsky & Kim, 2007). Thus, the present study intends to determine whether depression in older adults increases more with age compared to younger adults as well as the psychosocial mediating factors that can explain the difference in depression according to age groups.

Certain previous studies have focused on stressful life events to explain depression among older adults; however, Murrell and colleagues (1988) suggested that the effects of transitional life events on depression were moderate and lasted only for a short period among older adults. The importance of life events on mental health may become evident in regard to the changes of psychosocial resources due to events other than the life events themselves. Therefore, the current study considers psychosocial factors such as daily work/activity quality, economic hardship, social support, and sense of control,

which are expected to be more sensitive for distinguishing the differences of chronic conditions or resources that affect depression than employment status, marital status, or economic status variables. Furthermore, this study examines the changes in psychosocial factors over time to explain the differential change in depression between older and younger adults.

## 1. Psychosocial Factors to Explain the Differential Depression Trajectories between Age Groups

One specific aim of this study is to reveal the mechanisms through which age groups have different trajectories in depression, resulting in more negative depression changes in older adults than younger adults. Four essential psychosocial factors are considered to explain the potential difference by age group: social support, sense of control, economic hardship, and fulfilling daily work quality. These four psychosocial factors are well known as having significant effects on depression and there are differences in these factors between older and younger adults (see Table 1 in Results). Therefore, they are strong candidates to mediate the relationship between age group and depression.

According to Wheaton (1983), social support directly decreases distress and buffers the negative effects of stressful life events. Social support might have a direct beneficial effect as well as buffering effects on psychological well-being (Thoits, 1982). It is possible that the increased depression among older adults might stem from age-related stressful life events, such as the loss of a spouse. However, according to a study of older adults (Haug, Belgrave, & Gratton, 1984), marital status did not have a significant effect on mental health change in older adults. Although the loss of a spouse would be intensely stressful, the increase in depression due to the event may be temporary and depend on the circumstances surrounding the loss or the amount of available resources (e.g., other social support). When the loss of the spouse was expected and other sources of social support were available, a substantial proportion of the bereaved did not experience intense distress (Wortman & Silver, 1990).

The second factor that might explain the age group difference in depression is the sense of control. According to Mirowsky (1995), adults ranging in age from 18 through 50 had stable mean levels of personal control. However, older adults demonstrated successive declines in the sense of control. Increased physical impairment and declining cognitive functioning in older ages as well as lower educational attainment in older cohorts explained the lower sense of control among the older adults. Individuals with a lower sense of control have a higher risk of depression because they are less likely to cope effectively with aversive situations. Meanwhile, those with a higher sense of control more actively engage in problem solving in aversive situations, which can reduce depression (Ross & Mirowsky, 1989). Thus, mastery beliefs or the sense of control is an important factor that can affect depressive symptoms (Zarit et al., 1999).

The third potential mediator is economic hardship. According to Mirowsky and Ross (2003), the elderly showed the lowest level of economic hardship. Economic hardship was highest in young adults, but it sharply decreased from age 40 to age 60 and stayed stable after age 60. The elderly showed the lowest level of household income. Household income reached the peak around age 50 and decreased in later life (until age 80). Although the elderly had decreasing household income, their economic hardship was low due to two main reasons. First, older adults have fewer dependents; therefore, their income per person did not decrease. Second, older adults have accumulated wealth and economic benefits from government programs such as Social Security, Medicare, and Medicaid. According to Pearlin et al. (1981), the intensification of economic strain decreases both self-esteem and the sense of control, thereby increasing depression. Ross and Huber (1985) found that economic hardship affected the depression of both spouses as ongoing economic hardship is “a recognition of unsuccessful fulfillment of both breadwinner and homemaker obligations” (p. 322). As older adults tend to have less economic hardship than younger adults, this mediating factor may contribute to reducing the depression gap between the older and younger adults in the current study.

The final potential mediator related to depression is daily work quality, which relates to how fulfilling one’s primary daily work or activity is. This subjective measure can be

used to assess daily work fulfillment of both those with paid work and those with unpaid activity. Ross and Drentea (1998) studied whether the daily activities of retirees were alienating or engaging and found that retirees showed a lower sense of control than full-time employees because their daily activities were socially isolated and gave fewer opportunities for problem solving. However, retirement did not affect distress because retirees' daily activities were fulfilling and autonomous. Thus, retirees' daily work had both positive and negative features.

In this study's analytic models to examine the net effect of age on depression, gender, race, and education need to be controlled. Controlling for gender and race serves to control for mortality selection. Male and Black adults are known to have higher mortality rates than female and White adults (Gibson, 1994). Therefore, relatively robust male and Black survivors might be included in the older adults group, making depression rates in the older adults group appear better (i.e., lower). Another confounder that may distort the age group difference in depression is the cohort effect. Cohort characteristics rather than age characteristics may affect depression. One main cohort characteristic that may potentially affect depression is that older cohorts have lower levels of education (Mirowsky, & Ross, 1992). Therefore, controlling for education is an effective way to control for the cohort effect.

## 2. Hypotheses

Two main hypotheses are examined in this study.

### 1. Slope Difference Hypothesis:

Older adults demonstrate a greater slope (more increase or less decrease) in depression than the younger adults over 6 years of time.

### 2. Mediating Factors Hypothesis:

The potential difference in depression between age groups is explained by psychosocial fac-

tors such as daily work quality, economic hardship, social support, and the sense of control.

## II. Methods

### 1. Data

This study depends on data from the survey of Aging, Status, and the Sense of Control (ASOC). ASOC is a national telephone probability sample of 2,592 U.S. households. A first wave of interviews was completed at the beginning of 1995. ASOC survey has two subsamples designed to produce an 80 percent over-sample of people aged 60 or older at baseline survey. The survey was limited to English-speaking adults. Interviews were completed with 71.6 percent of the eligible people who were contacted. The following statistics compare the demographic characteristics of the ASOC baseline sample to those for the U.S. population as a whole (U.S. Bureau of the Census, 1995). These statistics are weighted to compensate for the oversample of seniors. For ASOC and the U.S., respectively, the percent female is 56.2 and 51.2, the percent white is 85.1 and 82.9, and the percent married (excluding cohabitators and the separated) is 55.7 and 55. For persons age 25 or older, the percent with a high school degree is 85.1 and 80.9, and the percent with a college degree is 25.6 and 22.2. The mean household income is \$43,949 and \$41,285.

This study uses ASOC data from 1995, 1998, and 2001. The ASOC survey reinterviewed 1,344 members (53.6%) of the baseline sample in 1998 and 1,144 members (44.1%) in 2001. Follow-up surveys inevitably lose cases for a variety of reason. This attrition might create differences between the sample and the population. In the results section, I assess the possibility of attrition bias on the essential results in this study by comparing descriptive statistics between the subsample that remained until the third wave and the baseline sample.

## 2. Measurements

**Depression.** *Depression* is measured with a form of the Center for Epidemiological Studies' Depression Scale (CES-D) reflecting depressed mood, physiological malaise, and the absence of positive emotions (Radloff, 1977). Respondents were asked, "On how many days in the past week have you" (1) "had trouble getting to sleep or staying asleep," (2) "felt you just couldn't get going," (3) "had trouble keeping your mind on what you were doing," (4) "felt that everything was an effort," (5) "felt sad," (6) "felt lonely," (7) "felt you couldn't shake the blues," (8) "enjoyed life" (9) "felt hopeful about the future," and (10) "felt happy." Items 1 through 7 are coded from 0 (never) to 7 (everyday), and items 8 through 10 are coded in reverse.

**Age Group.** This study uses two age groups: older adults (60 years old and older) and younger adults (18 to 59 years old). One reason why age 60 is used to distinguish the groups is that the survey design used age 60 for the over-sample of older adults. One limitation in this study is to classify the adults into two broad age groups rather than subdividing the age groups. However, this limitation is an inevitable methodological choice and does not damage the aims of this study. One main aim of this study is to compare the depression pattern between older adults and younger adults, and this aim has been set in the context that certain studies argues that the higher depression among the elderly, compared to younger adults, is a myth or an exaggerated argument. Another main aim of this study is to explain the potential difference in depression pattern between the elderly and the non-elderly using diverse psychosocial factors as mediators. If we utilize subdivided age groups, the modeling to examine the mediating effects of diverse psychosocial factors becomes very complicated and hard to interpret. Therefore, to use simplified two age groups is a realistic choice for methodological effectiveness and appropriate enough for the main two aims of this study.

**Control variables.** *Female* (a dummy variable) and *racial minority* (a dummy variable indicating self-identified non-Caucasian) are used. *Education* represents number of years of formal schooling.



**Fulfilling Work Quality.** Respondents subjectively assessed the fulfilling quality of their primary daily work, whether paid or unpaid. *Fulfilling work quality* is the mean of two indicators, and alpha reliability of the scale is .711. The first indicator is measured by agreement (4-point scale) to a statement about the work or activities which they mostly do in a day, “My work (daily activities) gives me a chance to do things I enjoy.” The second indicator is “My work (daily activities) gives me a chance to develop and to learn new things.”

**Economic Hardship.** *Economic hardship* is assessed by asking respondents three items: “During the past 12 months, how often did it happen that (1) you had trouble paying the bills; (2) you did not have enough money to buy food, clothes, or other things your household needed; (3) you did not have enough money to pay for medical care?” Responses are “never” (coded 1), “not very often” (coded 2), “fairly often” (coded 3), and “very often” (coded 4). Economic hardship is the mean response to the three items; alpha reliability of the scale is .819.

**Social Support.** *Social support* is the mean of four indicators representing emotional and instrumental support, and alpha reliability of the scale is .888: (1) “I have someone I can turn to for support and understanding when things get rough,” (2) “I have someone I can really talk to,” (3) “I have someone who would help me out with things,” and (4) “I have someone who would take care of me if I were sick.” Responses are “strongly disagree” (coded 1), “disagree” (2), “agree” (3), and “strongly agree” (4).

**The Sense of Control.** *The sense of control* is the mean of eight indicators: a) claiming control about success - i) “I am responsible for my own success” and ii) I can do just about anything I really set my mind to,” b) claiming control about failure - i) “My misfortunes are the results of mistakes I have made” and ii) I am responsible for my failure,” c) denying control about success - i) “The really good things that happen to me are mostly luck” and ii) “There is no sense planning a lot-if something good is going to happen it will,” and d) denying control about failure - i) “Most of my problems are due to bad breaks” and ii) I have little control over the bad things that happen to me.” Responses are coded so that -2 = strongly disagree, -1 = disagree, 0 = neutral

(don't know), 1 = agree, and 2 = strongly agree (Items in c and d are reverse coded). This design has the same number of indicators claiming control as denying control, and the same number questions about good outcomes as about bad ones, eliminating any risk of bias from agreement tendencies and from self-defense or self-blame. Alpha reliability of the scale is .581.

Finally, the variables which may explain the age group difference in depression in this study have time-variant characteristic, and changes or dynamics of the variables over time may explain the relationship between age and depression change. To examine the possibility, the each change in education, fulfilling work quality, economic hardship, social support and perceived control between baseline and wave 3 was calculated to generate the change variable (e.g., education level at wave 3 minus education level at baseline).

### 3. Analytic Model

To study the trajectory of depression, this study employs latent growth-curve modeling, a specific type of random coefficient model that models change in a phenomenon and individual differences in such change over time (see Figure 1 in Results). Using this technique, time-specific measures of a construct are used to estimate an underlying growth trajectory - a single line that best fits the multiple time-specific measures. As in a general structural equation modeling framework, this trajectory can be characterized by unobserved latent factors - in this case, the intercept and slope of depression (Curran, 2000). Measures of depression at three time points are used to estimate the over-time trajectory in depression. The first latent factor represents the intercept of the trajectory. Factor loadings for this latent factor are set to 1 to represent the starting point of the trajectory in wave one. The second latent factor represents the slope, or the rate of change in depression over time. To define the slope as linear, the factor loadings for this latent factor are set to 0, 3, and 6. At EQS 5.7b, the Lagrange Multiplier (LM) test and Wald test are conducted to construct and estimate all appropriate models corre-

sponding to the theoretical framework (Bentler, 1995). To estimate a covariance structure model, the correlation matrix of all observed measures is generated, and the oversampling of the older adults is adjusted using a weight variable.

The analyses in this study proceeds in two steps. First, three unconditional latent growth models are estimated: for all adults, for older adults, and for younger adults. The second step uses the progressive adjustment method to confirm the effects of the mediating psychosocial factors. By adding certain mediating variables to the previous models, the contribution to the potential age-group difference in depression can be examined.

### III. Results

The descriptive statistics in Table 1 show the means of depression and the independent variables by age group. The differences between the older and younger adults in depression change demonstrate that depression increase is much greater among older adults than among younger adults. Older adults also indicate more negative changes in daily work fulfillment, social support, and personal control.

The values in brackets in Table 1 are the means of focal variables for the baseline whole sample. The follow-up subsample (1,144 cases retained until the third wave) shows a lower average level of depression at baseline than the whole sample, suggesting the possibility of sample attrition bias (i.e., more robust persons were retained in the follow-up sample). Those retained until the third wave are less likely to be a racial minority and have better conditions in psychosocial factors (e.g., the proportion of racial minorities among those aged under 60 is .20 in the baseline sample, but the proportion in the follow-up sample is .137; see Table 1). This potential selective attrition bias could result in the underestimation of depression as more robust respondents were retained in the follow-up subsample. However, the primary concern in this study is the potential influence of the attrition bias on depression difference by age group. Although

underestimations of depression might exist in absolute terms, these underestimations would not be a significant threat to the results in this study if the bias does not affect the relative difference in depression between the two age groups.

The mean-value differences in depression and the focal variables between the two age groups are similar in both samples. In the baseline sample, the mean difference in depression between the two age groups is .15 (calculated from 1.04-.89 in the first row of Table 1) while the mean difference in the follow-up subsample is .13 (calculated from .853-.727 in the first row of Table 1). These data indicate that the pattern of sample attrition in both the older and the younger adults groups is similar in terms of

**Table 1. Descriptive Statistics: Means and Standard Deviations  
 (in parenthesis) of Focal Variables.**

	Cases	All Adults	Age Groups	
			Older Adults	Younger Adults
Depression in 1995 (t1)	1144	.794 (1.046)	.727(1.056) [.89]	.853(1.035) [1.04]
Depression Change (t3-t1)	1133	.184 (1.180)	.301(1.119)	.081(1.224)
Female	1144	.586 (.492)	.629 (.483) [.63]	.548 (.498) [.55]
Racial Minority	1144	.114 (.318)	.087 (.283) [.10]	.137 (.345) [.20]
Education	1144	13.49 (2.727)	13.02(2.972) [12.7]	13.90(2.421) [13.6]
Fulfilling Work	1131	3.201 (.587)	3.212 (.537) [3.14]	3.191 (.627) [3.16]
Economic Hardship	1128	1.317 (.574)	1.188 (.471) [1.22]	1.429 (.631) [1.52]
Social Support	1144	3.314 (.486)	3.203 (.441) [3.18]	3.411 (.503) [3.36]
Personal Control	1144	.674 (.507)	.585 (.499) [.52]	.751 (.501) [.72]
Δ Education	1144	.217 (1.443)	.170(1.534)	.259(1.357)
Δ Work	1108	-.011 (.675)	-.093 (.634)	.057 (.702)
Δ Hardship	1095	-.078 (.544)	-.029 (.415)	-.121 (.632)
Δ Support	1120	-.007 (.528)	-.030 (.483)	.013 (.564)
Δ Control	1121	.005 (.465)	-.071 (.462)	.071 (.458)

Note: Mainly considering cases of 1,144 remained until the third wave; Total number of baseline sample is 2,592; The means in baseline sample are shown in bracket, [ ].

depression. The mean differences in other independent variables (except for racial minority) between the two age groups are also similar in both samples. According to a previous study using two waves of ASOC data (Mirowsky & Ross, 2001), the race variable did not significantly affect depression constant or depression change net of other factors; therefore, the race variable is not expected to affect the relationship between age and depression in this study. In summary, the two samples – the baseline sample (2,592 cases) and the subsample with respondents retained until wave three (1,144 cases) – have similar characteristics in terms of the primary interest in this study (i.e., the relationships between the age variable and focal variables such as depression). Therefore, the potential sample attrition bias is unlikely to distort the main results of this study.

The first goal of this study is to use latent growth modeling to examine how the constant and change of depression differ between older and younger adults. Table 2 presents the results of three unconditional latent growth models: all adults (902 cases after listwise deletion for missing cases), older adults (426 cases), and non-elderly (476 cases), respectively. The results in the first row demonstrate the pattern of depression trajectory for all adults over 6 years of time from 1995 to 2001. The mean depression in 1995 is .789, while the mean slope is .025 per year. Thus, overall depression for all adults increased from 1995 to 2001. Furthermore, the variance of the intercept factor is

Table 2. Parameter Estimates of the Unconditional Latent Growth Models of Depression, by Age Groups.

	Means		Variance		Correlation (I,S)	CFI	SRMR
	Intercept	Slope	Intercept	Slope			
All Adults	.789***	.025***	.678***	.01**	-.345*	.991	.001
Younger Adults	.854***	.012	.727***	.013*	-.391*	.994	.001
Older Adults	.694***	.043***	.611***	.006	-.244	.991	.001

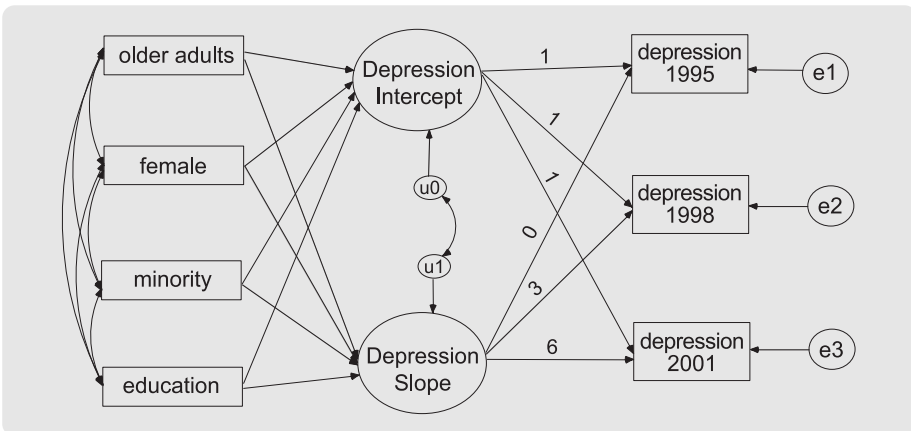
Note: N = 902 (All), 476 (younger adults), 426 (older adults); \*P<.05; \*\* P<.01; \*\*\* P<.001 (2-tailed tests); A joint criteria to retain a model are that CFI (Comparative Fit Index) is equal to or more than .96 and SRMR (Standardized Root Mean-Square Residual) is equal to or less than .10.

significant at the .05 level, indicating individual variations in depression at the baseline. The variance of the slope factor is also significant at the .05 level, indicating individual variations in depression change over 6 years. The correlation between the intercept and the slope factors has a significant negative value, indicating that individuals who have higher initial depression tend to have lower changes in depression.

For the non-elderly group, the average depression at baseline is .854 while the average slope is .012 per year; for the older adults group, the average depression at baseline is .694 while the average slope is .043 per year. Therefore, older adults have lower depression at baseline and higher increase in depression over time compared to younger adults. Although older adults indicate lower initial depression, they catch up with younger adults in depression after about 5 years because of their greater rate of increase of depression. This result suggests that the essential issue in depression among older adults is how their depression worsens with age rather than their depression level at a single point in time.

Model 1 in Table 3 examines the net effect of the age group variable on depression intercept and slope, adjusting for gender, race, and education. Figure 1 graphically displays Model 1 in Table 3. For the age group variable, a dummy variable distinguishing

Figure 1. Latent Growth Model for Depression over Six Years (Data: ASOC)



older adults (60 years old or older) is used whereas the reference category is adults under 60 years of age. Supporting the results of previous studies, model 1 (see Table 3) indicates that females have significantly higher depression at baseline than males. However, no significant difference exists in depression slope by gender. Racial minorities do not demonstrate significantly higher depression (at Alpha = .05 level) than White adults in either depression intercept or slope.

Table 3. Depression Constant and Change Regressed on Age Group and Psychosocial Variables: Latent Growth Models (Metric Coefficients).

Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
Older adults <sup>a</sup>	-.235**	.037**	-.068	.025+	-.118+	.030*	-.119+	.024+	-.119+	.011
(age > 59)	(-3.291)	(2.803)	(-.997)	(1.836)	(-1.704)	(2.146)	(-1.662)	(1.740)	(-1.704)	(.783)
Female	.185*	.007	.112 <sup>+</sup>	.011	.109 <sup>+</sup>	.011	.109 <sup>+</sup>	.010	.109 <sup>+</sup>	.008
Racial Minority <sup>b</sup>	.188+	.003	.055	.012	.057	.011	.057	-.000	.057	.001
Education	-.060***	.001	-.017	-.001	-.007	-.002	-.007	-.000	-.007	.002
Fulfilling work			-.434***	.015	-.384***	.010	-.384***	-.040**	-.384***	-.034**
Economic hardship			.467***	-.042***	.436***	-.039**	.436***	.002	.436***	.001
Social support					-.071	.010	-.071	.008	-.071	-.002
Perceived control					-.253***	.022	-.253***	.032*	-.253***	.005
Change in education								-.005		-.004
Change in work								-.081***		-.075***
Change in hardship								.068***		.066***
Change in support										-.013
Change in control										-.053***
$\chi^2$ /df	6.36 / 7		13.26 / 11		21.27 / 15		59.38 / 38		80.01 / 53	
RMSEA	.00		.01		.02		.03		.02	

Note: N=868; T-values in parenthesis; + P<.10; \*P<.05; \*\* P<.01; \*\*\* P<.001 (2-tailed tests).

<sup>a</sup>Compared to adults under 60 years of age.

<sup>b</sup>Compared to White adults.

In the Model 1 results, older adults have significantly lower initial depression but a greater depression slope after adjusting for gender, race, and education. This result supports the first hypothesis (i.e., the slope difference hypothesis). In other words, depres-

sion in older adults increases more with age when compared to younger adults.

Another goal of the current study is to reveal the mechanisms through which the age groups have different patterns in depression. The results of Model 2 to Model 5 in Table 3 use a progressive adjustment approach to summarize the roles of psychosocial factors affecting depression in the different age groups.

Two important mediating variables – namely, fulfilling daily work and economic hardship – are added to Model 1 to determine how much of a difference in depression between the age groups is explained by the two mediators. By controlling for fulfilling work and economic hardship, the gap in initial depression between older and younger adults changes from  $-.235$  to  $-.068$ , indicating that the two mediating variables to some extent explain why older adults have lower depression at baseline than younger adults. Indeed, the results indicate that approximately 71% of the age group difference can be attributed to these two mediators (calculated from  $[-.235 - (-.068)] / -.235$ ). According to the results in Table 1, the average values in fulfilling daily work are nearly the same in both older and younger adults. Therefore, the fulfilling work variable should not play a substantial role in the age group difference in depression at baseline. Consequently, economic hardship is a crucial factor in the depression difference between older and younger adults. In short, older adults have less depression at baseline than younger adults due primarily to their lower economic hardship.

Adjustments for fulfilling work quality and economic hardship also reduce the coefficients of sex, race, and education variables by 39%, 71%, and 72%, respectively. Female, racial minority, and less-educated persons have higher depression at baseline due to their less fulfilling daily work and greater economic hardship when compared to male, White adults, and more-educated persons.

In the Model 3 results, when two other mediating factors – namely, social support and perceived control – are added to Model 2, the gap in depression at baseline between the older and younger adults increases again (from  $-.068$  to  $-.118$ ). In Model 3, social support does not significantly affect either depression intercept or slope net of other factors. Therefore, a more important mediator for explaining the age-group difference in depres-



sion is perceived control. Older adults have a lower sense of control than younger adults (see Table 1 results), and one's sense of control reduces depression. As such, controlling for one's sense of control lowers depression among older adults, thereby increasing the gap at baseline between the age groups (from  $-.068$  to  $-.118$ ).

In addition to studying age group differences in initial depression, this study examines depression change – particularly, why older adults have a higher growth rate in depression. However, the four psychosocial factors at baseline appear not to play substantial roles in explaining age group difference in depression change according to the results in Models 2 and 3. Psychosocial factors at baseline might hardly affect the depression change over time, as demonstrated by their mostly non-significant effects on the depression slope in Models 2 and 3. Therefore, the changes of psychosocial factors over time are considered in Models 4 and 5.

When three change variables – namely, changes in education, fulfilling work quality, and economic hardship – are added to Model 3, the difference in depression slope between older and younger adults decreases about 20% (from  $-.030$  in Model 3 to  $-.024$  in Model 4). The change variables were modeled to predict only the depression slope not the depression intercept because it is causally illogical for the changes over the follow-up period to predict depression at baseline. In Model 4, the change in education does not significantly affect depression slope. Therefore, important mediators that explain the age group difference in depression change are changes in fulfilling work quality and economic hardship. Older adults experience more negative changes in fulfilling work quality (see Table 1 results); consequently, their depression change is worse (i.e., a greater increase) than that of younger adults. Although the economic hardship at baseline among older adults is better than younger adults, the change in economic hardship among older adults is worse than that of younger adults (see Table 1 results). Therefore, older adults have a higher growth rate in depression than younger adults; relative changes in daily work quality and economic security are more negative among older adults.

Finally, when the two remaining change variables – namely, changes in social support

and perceived control – are added to Model 4, the difference in depression slope between older and younger adults decreases approximately 54%, becoming non-significant (from -.024 in Model 4 to .011 in Model 5). The effect of social support change on depression slope is not significant. Therefore, the change in perceived control plays an important role in this mediating process. Older adults experience a greater increase in depression than younger adults because their changes in perceived control are more negative than those in younger adults (see Table 1 results). In Model 5, which considers all relevant variables, only four variables significantly affect the depression slope. Particularly, among psychosocial variables at baseline, only fulfilling work quality significantly affects the depression slope net of other variables. Fulfilling work quality appears to be a strong predictor of depression change as well as satisfying the causal order issue. The difference in depression change according to age group may be explained by elders' more negative changes in daily work quality, economic hardship, and sense of control than those of younger adults.

## IV. Discussion

In summary, older adults have a lower depression at baseline than younger adults. Economic hardship and the sense of control play important roles in explaining the gap between older and younger adults. Although the effect of perceived control offsets the effect of economic hardship, older adults have a lower level of depression at baseline than younger adults. In other words, elders' lower sense of control contributes to their higher depression, but their lower economic hardship contributes to their lower depression when compared to younger adults, ultimately resulting in lower depression among older adults. Older adults also experience worse changes in depression over time than younger adults. Changes in economic hardship, fulfilling work, and perceived control play important roles in explaining the gap between older and younger adults. Older adults experience a greater increase in depression than younger adults because their rela-

tive changes in economic hardship, fulfilling work quality, and perceived control are more negative than those of younger adults.

Although many studies have examined the relationship between diverse psychosocial factors and depression change, only a few studies have examined the differential trajectories of depression between adult age groups. The relationship between age and depression was mainly examined in cross-sectional studies (Mirowsky & Ross, 1992). The cross-sectional studies and the few longitudinal studies provided the results that depression level in later life was higher than that in middle adulthood and change in depression among older adults was worse than that among younger adults (Mirowsky & Kim, 2007). Results of the present study are consistent with those of previous studies in the point that change in depression among older adults was worse than that among younger adults. However, previous studies did not examine the mechanisms through which change in depression among older adults became worse than that among younger adults. This study's unique theoretical contribution is to uncover the reasons why change in depression among older adults was worse than that among younger adults considering several psychosocial variables as mediators.

Two potential limitations of the current study warrant further consideration. As an inherent limitation of panel data, the possibility exists that a confounding problem occurs between the effects of age and period. According to the results of the first unconditional latent growth model in Table 2, for all adults, depression tended to increase from 1995 to 2001. This increase might be attributed to period effect as well as aging effect. Due to recent historical trends, the overall mental health of adults in the United States might have been exacerbated. Second, the progressive adjustment approach in Table 3 examines why older adults have a greater increase in depression than younger adults. The psychosocial factors at baseline do not explain the depression change substantially, and changes in the psychosocial factors were considered when examining age group differences in depression change. One limitation in this examination is that it was not possible to completely exclude the risk of reverse causality. In other words, change in depression might affect changes in economic hardship, fulfilling

work quality, and perceived control, although previous studies have demonstrated the existence of the causal order from the psychosocial factors to depression (Mirowsky & Ross, 2003).

According to the results of this study, one mental health issue facing older adults is that their depression more significantly worsens with age when compared to younger adults due to more negative changes in daily work quality, economic hardship, and the sense of control. In the case of economic hardship, Mirowsky and Ross (2003) found that older adults have stable rates of economic hardship with increasing age, whereas middle-aged adults experience sharp declines in economic hardship with age. This positive change of economic hardship in younger adults decreases depression over time among younger adults. The lower increase in depression among younger adults partially relates to this relatively positive change in economic hardship as compared to older adults.

In the case of fulfilling daily work, although older adults' daily work quality is not less fulfilling than that of younger adults, the change in fulfilling work quality is relatively negative among older adults. Social interventions to support older adults in having more fulfilling daily work may prevent or reduce depression as this factor is not only a strong predictor of depression change, but also an important mediator for generating differences in depression change between older and younger adults. Sense of control is another important mediator for generating the age group difference in depression change; older adults experience worse changes in sense of control, which may result in worsened changes in depression than among younger adults. Unexpectedly, social support at baseline or the change in social support did not significantly affect depression. This result suggests the necessity for further empirical/theoretical examinations of social support and depression in future research. One explanation for the insignificant role of social support – based on an additional analysis in this study – is that social support affected depression through personal control and economic hardship rather than affecting depression directly.

Finally, two implications of this study need to be mentioned. First, any study of

depression in older adults needs to consider depression change and the roles of changes in psychosocial factors, using a longitudinal framework. This study intends to reveal whether the depression problem is more serious among older adults compared to younger adults and we found that more worsening change in depression among older adults is an essential problem in this issue. Although this study is about the US, these results provide important implications for the studies in Korea. Most Korean studies in this topic have focused on only older adults sample and have conducted cross-sectional analyses. However, this study results suggest that older adults need to be compared with younger adults in order to appropriately understand their relative seriousness in this depression problem. This study also suggests that a longitudinal approach may be more appropriate than a cross-sectional approach in this topic.

Second, the results of this study provide specific policy implications for improving the elderly population's depression, namely by increasing fulfilling daily activities and maintaining their sense of control. As the proportion of the aging population and retirees is currently increasing, social policy needs to encourage the elderly to engage in more desirable daily activities through efforts such as policy support for community activities or recreational activities. One concrete suggestion in this policy direction is encouraging the elderly to participate in outdoor recreational activities because such activities are most fulfilling according to the data utilized in this study. For example, if a government policy induces diverse community centers to open outdoor-recreation classes and provides partial support for the cost of the elderly participants, it may be an effective way to prevent or reduce depression among the elderly.

김진영은 미국 텍사스오스틴 대학교에서 사회학 박사학위를 취득하였으며, 현재 고려대학교 조교수로 재직중이다. 주요 관심분야는 의료/건강 사회학, 양적방법론, 노년사회학, 인구학 등이다 (E-mail: jy21kim@gmail.com).

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## 미국 성인 연령 집단 별 우울증 궤적의 차이: 사회심리적 요인의 매개역할을 중심으로

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본 연구는 미국 성인에 대한 한 전국 표본(2,592명)의 패널 자료를 이용하여, 노인 집단(60세 이상)과 청장년 집단(18세부터 59세) 간 우울증 궤적이 어떻게 다른지를 검토하며, 만일 우울증의 수준과 변화가 연령 집단 별로 다르다면 그 차이를 몇 가지 사회심리적 요인으로 설명하려 한다. 우울을 측정하기 위해서 CES-D의 척도들이 활용되며 1995년부터 2001년까지 6년간 우울증의 궤적을 잠재성장곡선 모형을 이용하여 추정한다. 주요 결과에 따르면, 노인 집단은 청장년 집단에 비해 우울에서 더 부정적인 변화(우울이 더 증가)가 있으며, 이 차이는 사회심리적 요인인 경제적 곤궁, 일상활동에 대한 충족감의 정도, 삶에 대한 통제감의 변화에 의해 상당 부분 설명된다. 즉 노인 집단은 경제적 곤궁, 일상활동의 충족도, 삶에 대한 통제감에서 청장년 집단보다 더 부정적인 변화를 경험하며 이것이 노인에서 우울의 변화가 더 부정적인 현상으로 이어진다. 이러한 결과는 노인의 우울 연구에서 시간에 따른 변화를 고려할 필요성을 제기하며, 우울 변화에서 중요한 역할을 하는 사회심리적 자원들을 확인케 한다.

주요용어: CES-D, 패널 자료, 노인집단, 잠재성장곡선모형