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CAUSAL EFFECTS OF RETIREMENT TIMING ON SUBJECTIVE WELL-BEING: THE ROLE OF CULTURAL NORMS AND INSTITUTIONAL POLICIES*

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Causal Effects of Retirement Timing on Subjective Well-being: The Role of Cultural Norms and Institutional Policies
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Abstract

OBJECTIVE: This article explores the relationship between the timing of retirement and subjective well-being change following that transition. Using longitudinal data from the Health and Retirement Study (HRS), we test four theory-based hypotheses about this relationship– that retirements maximize subjective well-being when they happen earlier, later, anytime, or on-time. METHODS: We examine individuals before and after transitioning to retirement and employ probit models with instrumental variables to estimate the causal effects of retirement timing on subjective health and mood after retirement. RESULTS: The results support the hypothesis that retirements maximize subjective well-being when they happen "on-time": Both very early and very late retirement transitions are associated with lower subjective well-being after retirement. DISCUSSION: Workers who begin their retirement transition around age 62–Social Security's early eligibility retirement age– experience the best outcomes in terms of subjective health and mood. This finding offers empirical support for the cultural-institutional theory that emphasizes the role of norms, expectations, and institutional cues. It highlights a tension between the economic gains of working longer and the subjective well-being benefits of retiring at early eligibility age. Raising the retirement ages would probably reduce well-being in the short run, but over time, cultural expectations would likely adjust.

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Introduction

Over the past few decades, social, behavioral, and health scientists have continuously scrutinized the effects of retirement timing on subjective well-being due to their consequences for the lives of older adults and for the success of policies promoting labor force participation at older ages (Ekerdt, 2010; Kim & Moen, 2002; Moore, 1946; Pallmore, Fillenbaum, & George, 1984). We identify four competing approaches in this literature. The psychosocial-materialist approach suggests that retiring later benefits subjective well-being because work is a source of identity and resources (Alavinia & Burdorf, 2008; Dave, Rashad, & Spasojevic, 2008). The psychosocial-environmental approach suggests that retiring earlier is preferable because work is a source of stress and risks (Jokela et al., 2010; Westerlund et al., 2009). In contrast, the bio-psychological approach postulates no effect of retirement timing on well-being—it focuses on the persistent influence of genes and personality on adjustment to new situations (Butterworth, Gill, Rodgers, Anstey, Villamil, & Melzer, 2006; van Solinge, 2007). Finally, the cultural-institutional approach postulates that retirements that happen around culturally and institutionally expected age have better subjective well-being outcomes than "off time" retirements (Börsch-Supan & Jürges, 2009; Bossé, Aldwin, Levenson, & Ekerdt, 1987).

[TABLE 1 ABOUT HERE]

These disagreements about the effects of retirement timing on subjective well-being persist despite the proliferation of empirical research on this issue. The bulk of this research suffers from important methodological limitations that have resulted in mixed findings. A major shortcoming is the scarcity of studies adjusting for endogeneity bias—that is, potential reverse causality in the relationship between retirement timing and subjective well-being as well as confounding effects of unobserved factors on subjective well-being. In addition, prior research

did not explore the curvilinear relationship between timing and well-being suggested by the cultural-institutional approach. We fill these gaps by using panel data and instrumental variable probit models that focus on variation in retirement timing that is exogenous to subjective well-being to test the four competing explanations summarized in Table 1. Specifically, we use two variables—early retirement window offer and changes in the U.S. Social Security regulations—to instrument retirement timing and assess its impact on subjective well-being. Well-being is measured as self-reports of excellent/good health and euthymic (non-depressed) mood.

The next section reviews relevant theoretical and empirical literature on retirement and subjective well-being in late life. Next, we describe the panel data from the Health and Retirement Study and present the results of probit models with instrumental variables that estimate causal effects of retirement timing on subjective well-being. The conclusion considers implications of our findings for the theoretical models of retirement timing as well as for social policy promoting labor force participation at older ages.

Main Theoretical Approaches

In this section, we first outline the four general theoretical approaches (see Table 1) and then review the empirical research bearing on these debates. Note that our categorization of prior literature into four theoretical approaches does not intend to reflect all of the nuances of any particular work, but rather to highlight the broad theoretical propositions underlying the body of literature that considers the effect of retirement timing on subjective well-being.

The psychosocial-materialist approach postulates that later retirements are more beneficial for subjective well-being because work is a key part of the identity of older individuals and provides them with financial, social, and psychological resources (Alavinia & Burdorf, 2008; Dave et al., 2008). On the economic side, postponing retirement by just two years

increases retirement wealth, which is important given rising longevity and the shifts away from defined benefit to defined contribution pension plans (Munnell & Sass, 2008). Later retirements may also promote opportunities to remain active and socially engaged, which may improve mental health and subjective quality of life (Taylor & Bengtson, 2001). In contrast, well-being may decrease after retirement due to the associated losses in identity, social relationships, and mental and physical activity related to work (Kim & Moen, 2002).

While the psychosocial-materialist approach stresses the positive aspects of work, the psychosocial-environmental approach emphasizes job-related stress and risks. This perspective argues that retirement can reduce stress and exposure to job hazards and increase opportunities for exercise (Mojon-Azzi, Sousa-Poza, & Widmer, 2007). Thus, it postulates that earlier retirements are more beneficial for subjective well-being than later retirements (Jokela et al., 2010; Westerlund et al., 2009).

The bio-psychological perspective postulates that retirement timing does not affect the way a person responds to the changes associated with retirement—rather, the effects of retirement on subjective well-being are shaped by one's genes and personality (Butterworth et al., 2006; Mein, Martikainen, Hemingway, Stansfeld, & Marmot, 2003; van Solinge 2007). Some individuals do well in retirement; for others, retirement can be detrimental to their well-being, but retirement timing does not affect these outcomes. Furthermore, this perspective sometimes incorporates elements of rational choice theory and argues that individuals voluntarily choose to exit the labor force and select optimal timing given their health, psychological predispositions, and economic circumstances. Thus, whereas this perspective admits that individuals' health and psychological well-being may affect retirement timing, it postulates no causal effect in the other direction—that is, no effect of retirement timing on subjective well-being.

Finally, the cultural-institutional approach emphasizes the role of norms and policies in shaping the effects of retirement timing on subjective well-being. This approach suggests that transitions that happen on-time—that is, at culturally and institutionally expected ages—produce better well-being outcomes than transitions that happen off-time. Settersten (1998) argues that age transition norms, sometimes termed cultural timetables, constitute widely shared constructs that use chronological age to order the timing of role transitions over the life course, such as the beginning and end of formal schooling, childbearing, and retirement. In accordance with the expectations set by such cultural timetables, retirement transitions can be defined as "late," "early," or "on time" based on one's age at the start of the transition (Börsch-Supan & Jürges, 2009). The cultural-institutional approach argues that individuals' physical and emotional health benefits when their experience is congruous with the cultural and institutional milieu (Diener & Suh, 2000; George, 2010). Specifically, transitions adhering to age norms may elicit less stress and more peer support compared to "off schedule" transitions (Van Solinge & Henkens, 2007).

[FIGURE 1 ABOUT HERE]

Based on these theoretical approaches, we generate four major hypotheses to test in this study, summarized in Figure 1: (1) the psychosocial-materialist hypothesis suggesting that later retirements cause better subjective well-being outcomes than early retirements, (2) the psychosocial-environmental hypothesis suggesting that earlier retirements cause better subjective well-being outcomes than later retirements, (3) the bio-psychological hypothesis suggesting that retirement timing has no significant causal effect on well-being, and (4) the cultural-institutional hypothesis suggesting that retirements that happen around culturally and institutionally expected ages cause better well-being outcomes relative to both very early and very late retirements.

Empirical Evidence

Prior empirical assessments of the effects of retirement timing on subjective well-being yield mixed findings. Numerous studies show that retiring later is associated with better subjective well-being (Alavinia & Burdorf, 2008; Dave et al., 2008; Jaeger & Holm, 2004); others, however, find that retiring earlier is preferable (Coursolle, Sweeney, Raymo, & Ho, 2010; Jokela et al., 2010; Mojon-Azzi, Sousa-Poza, & Widmer, 2007; Westerlund et al., 2009). A few studies support the possibility that retirements that happen on-time maximize subjective well-being (Börsch-Supan & Jürges, 2009; Bossé et al., 1987; Pallmore et al., 1984). Yet there are as many studies finding no significant relationship between retirement and well-being (Butterworth et al., 2006; Lindeboom, Portrait, & van den Berg, 2002; Mein et al., 2003; van Solinge, 2007).

This considerable variation in findings, we argue, stems from methodological limitations of much of this research, and especially from lack of attention to the endogeneity bias when assessing the effects of retirement timing. For most individuals in the U.S., retirement is a choice; thus, subjective well-being can have an effect on the decision to retire, generating an endogeneity bias. In addition, various unobservable factors may further confound the relationship between retirement timing and well-being. While the bulk of previous research has acknowledged endogeneity, it has not addressed it adequately. Many studies use cross-sectional data to evaluate the association between retirement and self-reported health and depression outcomes (e.g., Butterworth et al., 2006). Other studies use longitudinal data but only deal with endogeneity by controlling for baseline levels of subjective well-being and modeling change and trajectories in subjective well-being (Pallmore et al., 1984; Lindeboom et al., 2002; Mein et al., 2003; Westerlund et al., 2009). Such studies do not ensure that only the variation in retirement timing that is exogenous to subjective well-being is used as a predictor of well-being.

Instrumental variables introduce variation in retirement timing that is exogenous to subjective well-being. Several studies have used an instrumental variable approach to obtain estimates of the causal effects of the *act* of retirement on subjective well-being (Charles, 2004; Neuman, 2008; Bound & Waidmann, 2008; Coe & Zemarro, forthcoming), but, to our knowledge, only two studies have examined the effects of retirement *timing* using an instrumental variables approach. Rohwedder and Willis (2010) used cross-sectional data from 13 countries and employed cross-national variation in public policies as an instrument for retirement timing. They did not examine any subjective well-being outcomes, but they did find that early retirement has a detrimental effect on cognitive ability. Coe and Lindeboom (2008), using unexpected offers of early retirement windows as an instrument, found no significant effect of retirement timing on a variety of physical and psychological health outcomes for men. They acknowledged, however, that early retirement may have a positive but temporary beneficial impact on self-reported health and ADL limitations for highly educated workers. Both studies did not evaluate the possibility of a curvilinear effect of retirement timing on well-being.

Taking into account the limitations of prior research, this paper addresses the controversy regarding the effects of retirement timing on subjective well-being by using panel data and instrumental variable regression models to examine whether the causal effects of retirement timing on well-being are linear, curvilinear, or non-existent.

Methodology

Data and Sample

We use data from the Health and Retirement Study (HRS), a nationally representative, biennial, panel survey of older Americans and their spouses that began in 1992 and has final release data available through 2008 (University of Michigan, 2010). We selected our sample

from the 9,760 individuals, born between 1931 and 1941, that became HRS cohort respondents in 1992. Given our interest in changes in subjective well-being after retirement, our sample includes only individuals who initiated their retirement during the study period. We used self-reported retirement status to identify respondents who made a partial or full transition to retirement. We included individuals who reported unemployment at the last observation before reporting full or partial retirement but excluded those who were disabled or not in the labor force. For simplicity, we will refer to this transition as one from employment to retirement. Of the 9,760 individuals in the HRS cohort, 5,656 transitioned to retirement, that is, reported "not retired" in 1992 and "partly" or "completely retired" by or before 2008.

Dependent Variables

Our dependent variables are based on self-evaluations of health and mood (George, 2010; Veenhoven, 2006). Subjective health is a dichotomy coded 1 for individuals rating their health after retirement as "excellent," "very good," or "good" and 0 for "fair" or "poor." Our measure of positive (euthymic) mood is a dichotomy coded 1 for individuals that reported no depressive symptoms after retirement on the reduced CES-D scale that asks: "Now think about the past week and the feelings you have experienced. Please tell me if each of the following was true for you much of the time this past week: you were happy; you enjoyed life; you felt lonely; you felt depressed; you felt sad; you could not get going; you felt that everything you did was an effort; your sleep was restless." We dichotomized this scale due to severe non-normality, but analyses using the continuous measure produced similar findings.

Retirement Timing

Retirement timing is the endogenous independent variable, measured as respondent's age at mid-point between the last wave of being "not retired" and the first wave of being "partly

retired" or "completely retired," recalculated into difference in years from age 62. A positive value indicates that the respondent initiated retirement after reaching age 62. We anchor our measure at age 62 because this is U.S. Social Security's "early" eligibility age for retirement benefits and also the age at which most older Americans claim benefits (Gustman & Steinmeier, 2009). To test for potential curvilinear effects, we also include a squared term of this variable.

Instrumental Variables

To avoid endogeneity bias and obtain estimates of the causal effects of retirement timing on health and mood, we use two instrumental variables: changes to Social Security's full retirement age and unexpected early retirement window offers. Using two instrumental variables adds substantial variation in retirement timing that is exogenous to well-being and allows us to evaluate the curvilinear relationship between retirement timing and well-being.

Changes to the full retirement age is a continuous variable ranging from 0 to 8, indicating the number of extra months required to be entitled to full benefits depending on one's year of birth. The Social Security Amendments of 1983 gradually increase the full retirement age from 65 to 67 between 2000 and 2027 to create incentives for continued employment at older ages and increase system financing (Gustman & Steinmeier, 2009). While the 1931-1937 birth cohort is entitled to full benefits at age 65, each birth year starting with 1938 adds two months to one's eligibility age. These changes to Social Security rules introduced exogenous variation in retirement timing, but mostly at the higher end of the distribution (Mastrobuoni, 2009).

Our early retirement window measure is a dichotomy coded 1 for respondents whose employers offered them a special incentive to retire. Such offers are typically unexpected, open for a short period of time, targeted to entire units or divisions rather than specific workers, and legally required to be unrelated to the health status of workers. Early retirement windows are

strong predictors of retirement (Coe & Lindeboom, 2008). Because they may be offered before age 65 or even 62, this variable introduces substantial exogenous variation to retirement timing beyond that produced by increases in the full retirement age.

Controls

To isolate the effect of retirement timing on subjective well-being and take into account inter-individual differences that may be causing older adults to disproportionally self-select or be channeled into earlier or later retirement transitions, we control for characteristics of retirement, job characteristics, subjective well-being baselines, and demographic characteristics.

Retirement characteristics include perceived control, anticipation, and speed of the transition. Perceived control is a dichotomy measuring whether retirement was something the respondent "wanted or partly wanted to do," as opposed to "was forced into," as reported at the onset of retirement. It is based on the following question: "Thinking back to the time you (partly\completely) retired, was that something you wanted to do or something you felt you were forced into?" Retirement anticipation measures the actual timing of retirement relative to the expectation of retirement before the transition. Respondents were asked: "And what about the chances that you will be working full-time after you reach age 65?", and they answered on a scale ranging from 0 ("absolutely no chance") to 100 ("absolutely certain"). We recalculate percentage into probability (ranging from 0 to 1) and multiply this estimated probability of working after age 65 by the difference (in years) between age 66 and respondent's age at the mid-point between the onset of retirement and the preceding wave. A high value on this variable indicates a highly unanticipated transition. We topcoded this variable at 5 to improve its distributional properties. Speed of retirement is a dichotomy coded 0 for individuals classified as

abrupt retirees (i.e., those who transition directly from “not retired” to “completely retired”) and 1 for gradual retirees (i.e., those who transition from “not retired” to “partly retired”).

Job characteristics include income, occupation type, hours of work, job demands, and self-employment status at the last wave of employment. Total individual income, measured in $10,000 units, was adjusted by Consumer Price Index (CPI) to 2007 real dollars, topcoded at $200,000 dollars, and then logarithmically transformed. Occupation type is a dichotomy indicating blue-collar occupations (including farming/forestry/fishing, mechanics/repair, construction trade/extractors, precision production, operators, and members of armed forces), with other types of occupations being the reference category. Hours of work reflect the usual hours worked per week at the main and second jobs combined. Job demands is an index measuring the frequency with which the job held by the respondent involved the following five characteristics: physical effort, lifting heavy loads, stooping/kneeling/crouching, good eyesight needed, and stress. For each characteristic, respondents indicated the frequency on the scale from 1 (“none or almost none of the time”) to 4 (“all or almost all of the time”); thus, the resulting index ranges from 0 to 20. Finally, the models control for self-employment.

Subjective well-being baselines are the values for subjective health and self-rated mood at the last wave of employment; we expect that subjective health and mood prior to retirement can predict health and mood in retirement (Kosloski, Stull, Kercher, & Van Dussen, 2005).

Demographic controls include gender, race/ethnicity, and education. Gender is coded 1 for women and 0 for men. Race/ethnicity is a dichotomy indicating non-White individuals (including Black/African American, American Indian/Alaskan Native, Asian/Pacific Islander, Brown/combination, Hispanic or Latino, and other); the reference category is non-Hispanic White/Caucasian. Education is a dichotomy coded 1 for less than high school education.

Analytic Strategy

The panel nature of the HRS is well-suited for assessing the effects of retirement timing on subjective well-being. Most research on subjective well-being in retirement uses cross-sectional designs which raise serious concerns about self-selection and endogeneity biases. We take advantage of the longitudinal nature of the HRS by controlling for the pre-retirement subjective well-being. We also include a rigorous set of controls and use instrumental variables.

We employ probit regression models with instrumental variables (implemented in Stata's ivprobit command) to estimate the causal effect of retirement timing on changes in subjective health and mood shortly after retirement. Specifically, we use increases to the full-retirement age and early retirement window offers as instruments. Both instruments combined are strong predictors of retirement timing ($F>10$). We mean-center all continuous predictors with the exception of timing, which was already centered at age 62. Our models also adjust for clustering of individuals within the same households as HRS surveyed both members of married couples. We conducted diagnostics for collinearity, nonlinearity, heteroscedasticity, and non-normality, as well as examined outliers and influential data. When necessary, we employed corrective transformations; these were documented in the descriptions of variables above.

To handle missing data, we performed a two-stage multiple imputation with chain equations (MICE), each stage including a random component. Given that the self-reported retirement status used for sample selection had missing values, we first imputed these missing values for each wave for those respondents among the original 9,760 individuals in the HRS cohort who were still alive at that wave. We used a range of supplementary variables from the dataset, such as details of employment at each wave, to assist us in this imputation. Using these imputed retirement status variables, we then selected individuals into our sample. Thus, the

sample sizes vary slightly across the 20 imputed datasets. At the second stage, we performed the imputation for the other variables used in the analyses. Finally, we dropped the imputed values of the dependent variables (health and mood) (von Hippel, 2007).

Results

Descriptive Statistics

[TABLE 2 ABOUT HERE]

Table 2 reports descriptive statistics for the subjective well-being outcomes, retirement timing, instruments, and control variables. The descriptive statistics for the subjective well-being baselines and outcomes suggest an average decline in health and mood. Table 2 shows that respondents retired at an average age of 62.83. The descriptive statistics also show a relatively small fraction of respondents being offered early retirement windows. In addition, increases in the full retirement age are substantial during the observed period.

Regression Results

[TABLE 3 ABOUT HERE]

Table 3 reports the results of the instrumental variables probit models for subjective well-being after retirement. A positive coefficient means a beneficial effect of a variable on a given subjective well-being measure, and a negative coefficient denotes a detrimental effect. Confirming the cultural-institutional hypothesis, our models find a significant curvilinear causal effect of retirement timing on both measures of subjective well-being after retirement.

[FIGURE 2 ABOUT HERE]

To better illustrate this curvilinear effect, we examine predicted probabilities of reporting good/excellent health and positive mood after retirement (see Figure 2). These predicted probabilities are calculated for an individual who scored zero on all other independent variables,

that is, a White, not self-employed male with at least a high school education and average values on all continuous variables. As Figure 2 illustrates, the curvilinear effect of retirement timing on subjective well-being has an inverted U-shape, suggesting that retiring either too early or too late can be detrimental for subjective well-being. The area on the curves between the two vertical lines is where the effect of timing does not matter, that is, where the marginal effects of retirement timing are not statistically significant on .05 level. Thus, it appears that the optimal retirement age range for maximizing subjective health is 61.1 to 62, while the optimal retirement age for best mood outcomes is 60.2 to 61.3.

Discussion

This study used panel data from the HRS and instrumental variable techniques to test four theoretical notions about the causal effect of retirement timing on subjective health and mood—that retirements maximize subjective well-being when they happen earlier, later, anytime, or on-time. Our results suggest that the best outcomes for well-being are observed for retirement transitions happening on-time—that is, around age 62, the early eligibility age for claiming Social Security retirement benefits and the usual age of retirement in the U.S. These findings support the cultural-institutional hypothesis that adherence to retirement age guidelines signaled by social policies and norms may ameliorate the potentially negative subjective well-being consequences related to moving to a new phase of the life course. In contrast, the findings do not support the bio-psychological hypothesis characterizing retirement timing as having no effect on subjective well-being given the persistent influence of genes and personality on the adjustment to new situations. Furthermore, the findings do not support either the psychosocial-materialist hypothesis suggesting that retiring later is preferred because work is a source of identity and resources or the psychosocial-environmental hypothesis suggesting that retiring earlier

maximizes subjective well-being because work is a source of stress and risks. In fact, we find that either retiring too early (before age 61.1 for health and 60.2 for mood) or too late (after age 62.0 for health and 61.3 for mood) can be detrimental for subjective well-being.

This paper contributes to the retirement literature by offering empirical support for the cultural-institutional theory that emphasizes the role of norms and policies in shaping the effects of retirement. The findings speak to broader debates about the importance of institutional and cultural expectations for perceptions of well-being during late life transitions. In a similar vein, results offer empirical support for the notion in the life-course theory that the timing of transitions is important for how individuals experience them (Elder, Johnson, & Crosnoe, 2003). The results are also consistent with the argument that off-time transitions may be a source of stress. Specifically, deviation from age norms likely increases the potential for a negative subjective well-being response to a life transition. To the extent that there is an institutionally reinforced and culturally expected age to begin a transition, positive subjective well-being outcomes seem harder to obtain when deviating from existing institutional structures and cultural conventions. Our empirical results also lend support to the argument in sociology of emotions that cultural expectations and institutional structures shape emotional well-being. While many individual factors do affect subjective well-being, institutional policies and cultural norms attached to age transition patterns are consequential as well.

This study also makes a methodological contribution. Prior studies on subjective well-being response to retirement suffer from important methodological limitations that have resulted in mixed findings and contradictory theories. This is the first study to simultaneously adjust for the potential reverse causality in the relationship between retirement timing and subjective well-being and explore the curvilinear relationship suggested by the cultural-institutional approach.

Our findings also have policy salience. In the context of rising longevity, a variety of initiatives encouraging delayed retirement has gained the attention of policymakers (Munnell and Sass 2008). While a plethora of research has focused on the impact of delaying retirement on economic well-being (Munnell & Sass, 2008), this study explores retirement timing in relation to subjective well-being. When evaluating changes to retirement age and considering labor force policies to promote longer working lives, it is important to take into consideration the effects on subjective well-being and their potential costs, such as health care expenses. Although waiting a few years after age 62 does not have a substantial detrimental effect on subjective well-being, further delays with retirement are linked to increasing risks of reporting poor health and depressive symptoms in retirement. Our findings, however, also show that retirements that happen too early are equally problematic: Retiring before age 61.1 for health and 60.2 for mood significantly increases the risk of poor subjective well-being. Our findings highlight the tension between the economic gains of working longer and the subjective well-being benefits of retiring at early eligibility age. That is, while retiring at early retirement age is considered detrimental for economic well-being because of lower Social Security benefits and lower savings, such timing of retirement is beneficial to subjective well-being. These subjective well-being benefits of retiring around age 62 may thus help explain why many individuals continue to take up Social Security benefits at age 62, even though it is against their long term economic interest.

These findings raise the question of how the observed relationship between retirement timing and subjective well-being would be affected by a change in Social Security's age of early eligibility. This question is increasingly important as policymakers around the globe consider promoting delayed retirement. Institutional definitions of retirement age certainly influence cultural norms and boundaries related to the expected timing of retirement: Tying access to

public and private pension benefits to chronological age effectively institutionalizes withdrawal from employment around benefit eligibility ages (Settersten, 1998; Van Solinge & Henkens, 2007). Once cultural norms have been established, however, it might be difficult to change them with further policy initiatives, as cultural changes typically lag behind institutional changes (Riley, Kahn, & Foner, 1994). Thus, it is likely that a change in Social Security's age of early eligibility would initially create a dissonance between cultural norms and institutional policies that would have negative effects on subjective well-being, but over time, cultural expectations would likely adjust and the optimal timing of retirement would shift, reflecting the new norm.

Future research should include more recent observations collected on the HRS cohort and other birth cohorts to analyze whether the optimal timing for retirement is the same across periods and cohorts. It should also examine similar processes in other countries to evaluate the effects of cross-national variation in normative retirement ages on well-being outcomes. Future research should also examine whether different groups of people would respond to changing incentives to work longer in different ways. Scholars could explore interactions between retirement timing and the retirement context, job characteristics, demographic characteristics, and subjective well-being baselines. Additionally, it is possible for the relationship between retirement timing and well-being to be curvilinear for some groups but linear or non-existent for others; future research should examine that possibility.

In sum, our study highlights the role of institutional policies and cultural norms in shaping subjective well-being. Retirement transitions are more beneficial if they happen during institutionally and culturally expected periods of time. Specifically, deviating from age 62—which is the earliest age at which Social Security benefits are available and the most common retirement age—has detrimental effects on subjective well-being.

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Table 1. Theoretical Approaches to the Effect of Retirement Timing on Subjective Well-being

When to retire?	Explanation	Mechanism
1. Later	Psychosocial-materialist	Identity/Resources
2. Earlier	Psychosocial-environmental	Stress/Risks
3. Anytime	Bio-psychological	Genes/Personality
4. On time	Cultural-institutional	Norms/Policies

Table 2. Descriptive Statistics

Variable	Mean	Std. Dev.
Subjective well-being outcomes		
Excellent/good health	.459	.498
No depressive symptoms	.505	.500
Retirement timing		
Deviation from age 62	.831	3.873
Retirement context		
Wanted or partly wanted retirement	.732	.443
Unexpected retirement	67.907	129.522
Partial retirement	.445	.497
Job context		
Income	3.926	3.468
Blue-collar worker	.282	.450
Hours of work	38.695	14.788
Job demands	12.878	2.868
Self-employment	.151	.358
Subjective well-being baselines		
Subjective health at baseline	.495	.500
Mood at baseline	.533	.499
Demographics		
Female	.508	.500
Non-white	.244	.430
Less than high school	.231	.422
Instrumental variables		
Early retirement window	.059	.235
Increase in full retirement age	2.926	2.767

Note: Raw values (before transformations and mean-centering) are reported for continuous variables.

Table 3. Instrumental Variables Probit Regression Results for the Effects of Retirement Timing on Subjective Well-being

	Subjective Health		Mood	
Retirement timing				
Deviation from age 62	-0.025*	(0.013)	-0.022	(0.016)
Deviation from age 62 squared	-0.029***	(0.002)	-0.015**	(0.005)
Retirement context				
Wanted or partly wanted retirement	0.266***	(0.051)	0.288***	(0.056)
Unexpected retirement	-0.093***	(0.017)	-0.092***	(0.022)
Partial retirement	0.164***	(0.037)	0.079	(0.041)
Job context				
Income	0.285***	(0.042)	0.214***	(0.048)
Blue-collar worker	-0.076	(0.046)	-0.079	(0.050)
Hours of work	-0.003*	(0.001)	-0.000	(0.001)
Job demands	0.015*	(0.007)	0.017*	(0.007)
Self-employment	0.383***	(0.061)	0.310***	(0.075)
Subjective well-being baselines				
Subjective health at baseline	0.078	(0.042)	-0.058	(0.045)
Mood at baseline	-0.093*	(0.044)	-0.084	(0.049)
Demographics	-0.154**	(0.047)	-0.286***	(0.053)
Female	0.899***	(0.056)	0.287***	(0.042)
Non-white	0.081*	(0.037)	0.632***	(0.052)
Less than high-school	-0.416***	(0.090)	-0.376**	(0.122)
Constant	-0.025*	(0.013)	-0.022	(0.016)
N	4,898		4,538	

Notes: Robust standard errors are in parentheses. Retirement timing was instrumented using early retirement window and changes to full-retirement age. Statistically significant coefficients are indicated as follows: *$p < .05$; **$p < .01$; ***$p < .001$ (two tailed tests).

Figure 1. Expected Functional Relationship by Theoretical Approach

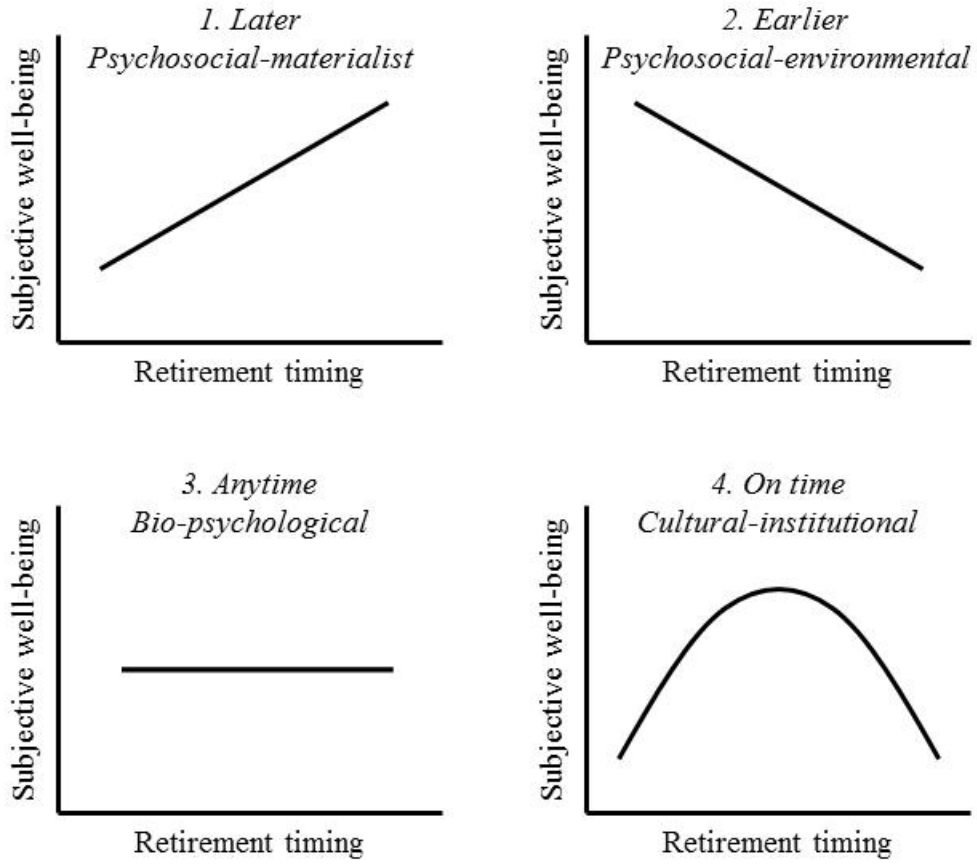
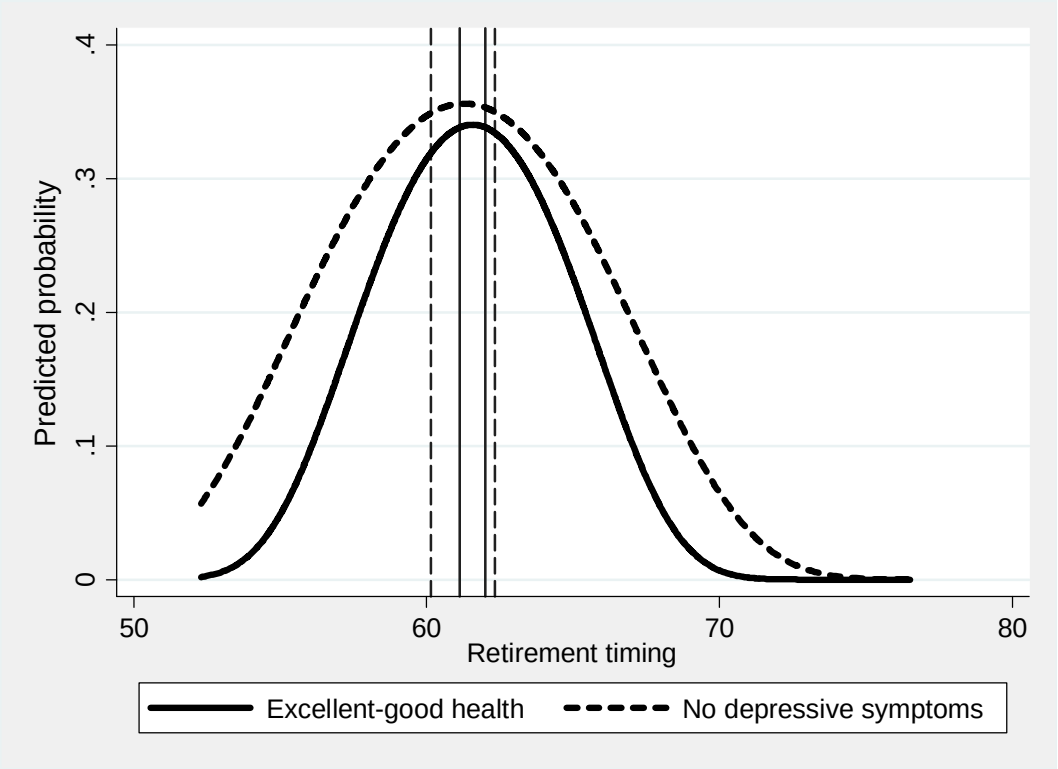


Figure 2. Effect of Retirement Timing on Subjective Well-being



Notes: Retirement timing effects are calculated holding continuous variables at their mean and dichotomous variables at zero.