Work Expectations, Realizations, and Depression in Older Workers

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Abstract

We explore the impact on depressive symptoms of deviation in actual labor force behavior at age 62 from earlier expectations. Our sample of 4,241 observations is drawn from the Health and Retirement Study (HRS). We examine workers who were less than 62 years of age at the 1992 HRS baseline, and who had reached age 62 by our study endpoint, enabling comparison of actual labor force withdrawal with earlier expectations. Poisson regression were used to estimate the impact of expected full-time work status on depressive symptoms; regressions are estimated separately for those working fulltime at age 62 and those not working fulltime. We found significant effects on depression at age 62 both for full-time workers who expected not to be working full-time, and for participants not working full-time who expected to be doing so. These results hold even after adjustment for earlier depressive symptoms, sociodemographic and other relevant controls. The findings suggest that working longer and retiring earlier than expected each may compromise psychological well-being. The current financial crisis may result in both scenarios as some workers may have to work longer than expected due to the decline in pension and other wealth while others may retire earlier due to job loss.

Introduction

Despite the fact that recent estimates of life expectancy among individuals aged 55 are 24.7 years for men and 28.3 years for women (1), until somewhat recently, the labor market witnessed a decades-long trend toward individuals' exiting the labor force increasingly earlier. Notwithstanding what appears to be the end of this trend (2,3), the average person retires at age 62, which implies a significant number of years over which the individual must finance basic consumption needs, non-work obligations, and leisure activities. Forecasting an appropriate time to withdraw from the labor force, and establishing a personal plan in accordance with the intended retirement time, may therefore be essential for post-retirement well-being. This type of planning may impact not only financial well-being, but also emotional well-being. In this study, we examine how depressive symptoms may be related to missed expectations about the timing of retirement; both not working when one expected to work and working when one had planned to retire.

About two million individuals 65 years old and older suffer from full-blown depression and another five million suffer from less severe forms. Thus about 20% of these elderly have some form of depression. Depression in older ages is often associated with a number of problems, ranging from low work productivity, poor social and family interactions, family and caregivers' distress, poor patient adherence to medical regimes, increased health care costs, and increased mortality related to suicide and medical illness (4). Treatment for depression can help to mitigate symptoms, but only when access to care to both to identify and treat depression is available.

Appropriate retirement planning and expectations about future work are certainly linked. If middle-aged individuals are not sufficiently prescient regarding the likelihood of working at older ages, they may not adequately prepare for retirement, which could obligate such individuals to work beyond their anticipated retirement age. Poor prediction may result from erroneous expectations about any number of things: one's future capability to carry out paid work, financial solvency for funding a planned retirement, or factors outside of the control set of individuals. Examples of the latter category include an unanticipated spousal labor force withdrawal, a jobless spell that interrupts asset accrual, or the onset of a health condition best managed by employer-sponsored health benefits. Whereas many imaginable reasons for working after a forecasted retirement age are negative, positive factors are also possible; for example, a change in the preference toward working or expanded opportunities for bridge employment.

On the other hand, there are factors that may cause individuals to retire earlier than they had expected to do so. Both negative and positive events might trigger early retirement. Thus, while such undesirable events as forced retirement, disability, family care responsibilities, could prompt early withdrawal, so could greater-than-anticipated investment returns or generous early-retirement packages. The net effect on well-being and depression depends on whether beneficial or non-beneficial events motivate the missed expectations.

The literature on future work expectations and realizations has principally focused on identifying predictors of labor force withdrawal or correlates of future work expectations. Much of the research departs from the theoretical model proposed by Beehr (5). Several studies have isolated the effects of health, financial holdings, job characteristics, and family demands in labor force withdrawal (6–9). Dyadic research (10–12) has further emphasized the impacts of spousal age and marital harmonization of the retirement decision. In addition, one study identified the effect of spousal support (13). Three studies have used employment expectations data from the Health and Retirement Survey (HRS) to forward research in this area. Pienta and Hayward suggested that household-level factors, including spousal wealth and retirement planning, may influence retirement expectations, (14). McGarry solidified the oft-debated effect of health status on retirement (15,16). In that study the author linked self-rated health and changes in health to the subjective probability of working at age 62 (16). By exclusively analyzing individuals who continued to work at age 62, the author removed much of the justification bias present in workers who retire early. Benitez-Silva and Dwyer studied the correlation between retirement expectations and actual retirement, reporting that expectations are strong predictors of actual retirement behavior, and events, such as incident health shocks, cause individuals to update their expectations (17).

While the extant research has developed in accordance with shifting retirement patterns and the availability of better data, consideration has not been directed to the relationship between employment expectations and well-being in light of actual employment behavior—that is, in the presence of knowledge about whether individuals continued to work or not. The present study, a longitudinal examination that uses data from the HRS, attempts to fill this gap. In this research, we explore the impact of deviations from the expectation of working full-time

at age 62 on depressive symptoms at age 62. Namely, we investigate whether an individual's prediction of working at age 62 influences the risk of depression differently for those who are versus are not working at age 62. In other words, does working, when the earlier expectation was not to be doing so, lead to higher depressive symptomatology? Or, in the converse, does not working, when the earlier indication was a higher likelihood of doing so, also elevate the depression risk? To answer these, we combine baseline HRS data, transformed to imply the subjective probability of working full-time at age 62, with follow-up HRS data on labor force participation at age 62.

Methods

Data

The data for this study were taken from the Health and Retirement Study (HRS) conducted at the University of Michigan (18). The HRS is a nationally representative sample of individuals born between 1931 and 1941 and their spouses, regardless of age. Beginning in 1992, 12,652 individuals from 7,702 households were surveyed in face-to-face interviews. Follow-up data are collected from participants every two years. The Survey, one of whose aims is to explore trajectories of well-being associated with the transition to retirement, contains extensive information on various dimensions of health, employment, and retirement planning and behavior. Our study uses HRS data through 2004, the seventh wave of the survey. We use Version H of the data prepared by RAND1. Details on these constructed variables may be found elsewhere (19).

Our potential sample (n = 5,239) comprised HRS participants who: (a) were less than 62 years of age and working for pay at the HRS baseline, as only such individuals were asked about their expectations of working full-time at age 62 at that time; and (b) reached age 62 by the study endpoint, so that actual labor force behavior could be compared with earlier expectations. From the potential sample, we eliminated observations with missing data on the baseline expectation of working full-time at age 62 (n = 67), depressive symptoms (Wave 2 no. missing = 405; age-62 no. missing = 359), age-62 spousal work status (n = 415), age-62 self-rated health (n = 3), and age-62 household size (n = 1). Our final sample was thus 4,241.

Measures

Outcome Variable—Age-62 depressive symptoms is a count variable that was based on responses to a shortened (8-item) form of the 20-item Center for Epidemiologic Studies–Depression (CES-D) scale. Of the eight items, six negatively phrased statements reflect the presence of depressive symptoms (respondent felt depressed; felt everything s/he did was an effort; experienced restless sleep; "could not get going"; felt lonely; felt sad), and two positively phrased statements suggest the absence of depressive symptoms (respondent enjoyed life; was happy). To create the variable used in our analyses, we dichotomized original responses to reflect the presence of individual items, reverse coding data from the positively phrased items. We then summed the dichotomized variables to achieve a count variable ranging from 0–8, where higher values suggest worsening depressive symptoms.

Explanatory Variable of Interest: Expected likelihood of working full-time at age 62—The subjective probability of working full-time at the age of 62, reported by the individual at the 1992 HRS baseline, is the key predictor variable in this study. It is based on responses to the following question: "Thinking about work generally and not just your

present job, what do you think are the chances that you will be working full-time after you reach age 62?" Raw response categories were 10-unit increments on a 0–100 scale (14,20). To convert these categories to a probability estimate, we rescaled the original responses to lie between 0 and 1. Thus, a score of 1 corresponds to an expectation of working of 100%, a score of 0.5 corresponds to an expectation of 50%, etc.

Covariates—Both time-invariant and time-dependent variables were controlled in our models. Time-invariant controls comprise: demographic variables, including age (in years), gender (1=female), marital status (1=married), race (1=non-White), and educational attainment (0=less than high school graduate [referent]; 1=high school graduate or GED; 2=some college, college graduate, or higher education); health variables, including whether one is dependent in any of five basic activities of daily living (i.e., dressing, bathing, eating, toileting, transferring) (1=yes), smoking status (1=current smoker), obesity status (1=obese, where Body Mass Index   30), and lagged depressive symptoms (CES-D count); and socioeconomic variables, including full-time work status (works full-time=1), household non-housing net worth, and household (sum of spousal) income. With the exception of depressive symptoms, all time-invariant variables were measured at the 1992 HRS baseline. The Wave 2 CES-D score was used as our baseline reference, due to changes, instituted at Wave 2 and carried forward in all subsequent waves, in both the question and response metric for the individual CES-D items. Three variables were treated as time dependent to account for occurrences that might motivate deviations from planned labor force withdrawal timing; each was measured using data from the survey wave at or after which respondents reached the age of 62. Change in household non-housing wealth was computed by taking the difference between the dollar value reported at age 62 and that given at the 1992 baseline. Age-62 self-rated health status, included to capture health declines, was a 5-category variable (0=poor [referent], 1=fair, 2=good, 3=very good, 4=excellent). Spousal working status, used to account for the effect of spousal labor force departures among married participants, was a binary variable (1=spouse works; 0=spouse does not work or respondent is unmarried).

Data Analytic Procedures

We used univariate methods (mean, for continuous variables; number and percent, for categorical variables) to describe the sample. We used Poisson regression analysis to explore the association between age-62 depressive symptoms and the baseline expected likelihood of working at age 62. Poisson results were expressed as incident risk ratios (IRR) and 95% confidence intervals. The outcome was estimated conditionally: the model was fitted separately for individuals who reported that they were working full-time at age 62 and those who reported that they were not working full-time at age 62. We stratified the analysis in this manner to capture variation in labor force behavior from that expected at the HRS baseline. The general specification of the reduced-form model is:

$$D_{62} = f[E(w)_{w1}, X_{w1}, D_{w2}, Z_{62}] + \varepsilon_{62}$$

where $E(w)$ is the baseline expectation of working full-time at age 62, X represents a vector of time-independent baseline controls, D represents depressive symptoms, measured at Wave 2, and Z is a set of time-dependent factors that capture individual and household-level changes, between the HRS baseline and age 62, that may affect the decision to continue working full-time.

We estimate two specifications. The first specification, which was meant to produce a benchmark estimate of the effect of the relationship between age-62 depression and the earlier expectation of working full-time, excludes time-dependent factors, Z_{62}. The second

specification, intended to highlight the potential mediating influence of events that may lead individuals to modify their likelihood working full-time, includes the time-varying factors.

Results

Description of the sample

The sample is described in Table 1. Descriptive statistics are given for both the full sample and analytic subgroups. At the HRS baseline, sample members averaged 56 years of age and were evenly divided between men and women. About three-quarters were married, and 15% were non-White. Eighty-one percent of sample members completed high school or achieved higher educational attainment. Just under a quarter reported smoking, 23% met the BMI criterion for obesity, and 4% were dependent in one or more of the five basic activities of daily living. Eighty percent were working full-time, and the means of non-housing net worth and family (spousal) income were $162, 522 and $53, 461, respectively. On average, sample members reported one depressive symptom. The mean subjective probability of working full-time was 0.48.

Comparing the analytic subsamples, we find rather similar characteristics. There are, however, some exceptions. A greater proportion of sample members who were working full-time at age 62 were male and employed in full-time positions at the study baseline than those who were not working full-time at age 62. Such individuals also have lower depressive symptoms and higher estimated likelihood of working at age 62.

Effects of full-time work expectations on age-62 CES-D count

Participants working full-time at age 62—Our results (Table 2) indicate an inverse association between age-62 depressive symptoms and the baseline expected probability of working full-time at 62, among the subsample of individuals who were working full-time at 62 (Columns 1 and 2). That is, of study participants who were working full-time at age 62, those who, at the HRS baseline, expressed a higher likelihood of working full-time at age 62 had significantly lower depressive symptoms than those who expressed a lower likelihood of working full-time at age 62. Expressed in terms of IRRs, every 10% increase in the expected likelihood of working full-time at 62 decreased the risk of depression by 13% (IRR=0.87, 95% CI 0.77, 0.97) in the model that controls only baseline covariates, and 11% (IRR=0.89, 95% CI 0.79, 0.99) in the model that additionally captures time-dependent events.

Participants not working full-time at age 62—Among study participants who were not working full-time at age 62 (Columns 3 and 4), we find a positive association between age-62 depressive symptoms and the baseline expected likelihood of working full-time at age 62. In this case, a 10% increase in the expectation of working full-time at 62 increased the risk of depression by 25% (IRR=1.25, 95% CI 1.12, 1.39) in the partially-adjusted model and 24% (IRR=1.24, 95% CI 1.11, 1.31) in the model in which time-dependent factors are also controlled.

Discussion

This study used data from a national sample of individuals nearing retirement to assess the impact of deviation in realization versus expectation of labor force participation on depression. The realization-expectation gap was inferred by comparing expected likelihood of working full-time at age 62 to actual labor force participation at that time. The results suggest that divergence from expected participation in full-time work has a measurable effect on mental health, regardless of the manner of deviation. Roughly stated, we found significant effects on depression at age 62 both for full-time workers who expected *not* to be

working full-time, and for participants *not* working full-time who expected to be doing so. More specifically, our results revealed increased risk of depression among full-time employed individuals who earlier offered lower estimates of working at 62, and elevated risk of depression in non full-time employed participants whose earlier estimates suggested a higher likelihood of working at 62. These results hold, even after adjustment for earlier depressive symptoms, sociodemographic controls, and several variables that capture important changes between the study baseline and the outcome's measurement that could plausibly precipitate mental health declines.

Our research builds on other investigations, which have examined the subjective likelihood of future employment in other contexts, by analyzing a specific health outcome. Previous studies considered how well individuals predict their labor force withdrawals, the role of health in forming expectations, and whether individuals update their beliefs in response to life events (16,17). They have not, however, associated future work expectations as it relates to employment realization with well-being.

We are agnostic regarding the mechanism that underlies the association between retirement expectations and depression. However, previous studies have shown that stress is a causal factor in depression (21,22) and not working when one planned to work may be psychologically stressful, which could induce depression. An unplanned labor force departure may produce financial stress as well as limit social interactions, peer social support, and view of self-worth (23–25). On the other hand, working when one planned to enjoy retirement may also induce stress. This stress may be engendered by disappointment in having to delay pleasant activities that were planned for retirement, these could include time spent with children and grandchildren, travel, or hobbies of all types.

There are several prominent advantages to the present study. First, the empirical approach, which stratified the sample by full-time work status at age 62, permitted us to use the full range of probabilities given by participants at the study baseline2. Second, we use a national sample, making the findings generalizable to late middle-aged US workers. Third, we are able to compare expectations to realities using the longitudinal data structure. Finally, we were able to control for pre-retirement depression, which circumscribes the potential effects of endogeneity and strengthens our inferential capability.

Two limitations should, nonetheless, be mentioned. Whereas our inclusion of lagged depressive symptoms removes some of the potential endogeneity in the model, there remains the possibility that the baseline estimate of age-62 full-time employment probability is still influenced by earlier, unmeasured factors. Secondly, treatment of the estimate of working as a continuous variable suggests a linear association to the depression outcome. Yet, we know from inspection of the data that despite its being a reasonably distributed variable, employment expectation has predictable modal clusters at 0, 0.5, and 1. Categorization of this variable would, nonetheless, result in information loss that could skew the findings.

Early retirement, if properly planned for, can bring pleasure. However, if expectations about retirement timing are not realized, then plans can go awry and well-being can be compromised. The ability to plan for retirement through adequate savings has been a very important policy concern. This paper suggests that the hazards of missed expectations in retirement may extent beyond adequacy of savings to psychological well-being. Both early retirement when one expected to work or the alternative mismatch, working when one

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2This would not be possible in analysis of a non-stratified sample, where we would be forced to either omit sample members whose employment probabilities were between 0 and 1 or reclassify them to one of the distribution's endpoints. (A somewhat remote alternative would be to difference the retirement realization, a binary variable, from the expectation estimate, a continuous variable. However, doing so imposes linearity, which is less flexible than the approach chosen.)

expected to retire, are associated with a significant increase in depressive symptoms. Inadequate savings may be one of the causal mechanisms, however, there are many other potential avenues. While we do not assess the mechanisms that link depression and the expectation-realization gap in retirement timing, we do show that this is a potentially important problem.

This evidence suggests that policy concerns regarding older ages should extend beyond savings to well-being, including risk of depression and its social and medical consequences. As social security plays a smaller role in financial planning, being replaced instead by financial vehicles that are dependent on the stock market (e.g. defined contribution plans), individuals may find that they have to work longer than they had planned. This is particularly pertinent given the current world-wide credit and stock market crises. Our results suggest that depression among workers may increase. Although two recent policy changes in the US suggest that access to treatment for mental health may be easier, recognition of the problem and seeking treatment may still be wanting. Both the recent enactment of parity for mental health services and the expansion of drug coverage through Medicare Part D could result in greater access. Depression could dampen the productivity of the older workforce, and thus become of concern not only for workers, but also firms and the government interested in enhancing productivity. Access to treatment for depression could be increasingly important for workers and non-workers. The consequences of non-treatment could include a less productive work force as well as a less satisfying retirement.

Acknowledgments

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Table 1

Description of the sample, full sample and by age-62 full-time work status

	Full Sample	Working full-time at age 62	Not working full-time at age 62
Outcome Variable			
Depressive symptoms (Range: 0 – 8)	1.08 ± 1.67	0.99 ± 1.57	1.17 ± 1.77
Explanatory Variables			
Time-independent Variables			
Probability of working full-time at age 62	0.48 ± 0.39	0.63 ± 0.37	0.34 ± 0.37
Age	55.62 ± 3.23	55.91 ± 3.27	55.32 ± 3.15
Male	2105 (50)	1218 (57)	887 (43)
Married civil status	3131 (74)	1564 (73)	1567 (75)
Non-White	616 (15)	279 (13)	337 (16)
Educational attainment			
Less than high school	803 (19)	403 (19)	400 (19)
High school graduate or GED	1594 (38)	778 (36)	816 (39)
Some college, college graduate, or more	1844 (43)	976 (45)	868 (42)
Current smoker	999 (24)	480 (22)	519 (25)
Obese	955 (23)	457 (21)	498 (24)
Requires help with one or more BADL	177 (4)	76 (4)	101 (5)
Wave 2 depressive symptoms	0.99 ± 1.69	0.89 ± 1.58	1.10 ± 1.78
Employed full-time	3374 (80)	1967 (91)	1407 (68)
Household non-housing net worth	$162,522 ± $448,753	$154,545 ± $413,931	$170,779 ± $482,115
Household income (respondent + spouse)	$53,461 ± $50,299	$53,217 ± $46,429	$53,712 ± $54,019
Time-dependent Variables			
Change in household non-housing net worth	$111,889 ± $780,710	$110,412 ± $990,499	$113,418 ± $475,544
Self-rated health at age 62			
Poor	175 (4)	47 (2)	128 (6)
Fair	608 (14)	272 (13)	336 (16)
Good	1322 (31)	702 (32)	620 (30)
Very good	1470 (35)	768 (36)	702 (34)
Excellent	666 (16)	368 (17)	298 (14)
Spouse is employed (respondent is age 62)	965 (23)	583 (27)	382 (18)
N	4,241	2,157	2,084

For continuous variables, table values represent mean ± standard deviation; for categorical variable, table values represent number and percent.

Table 2

Relationship of full-time employment expectation to depressive symptoms at age 62, by full-time work status: Poisson regression results

	Working full-time at age 62 (N = 2,157)		Not working full-time at age 62 (N = 2,084)	
	Partially Adjusted Model IRR (95% CI)	Fully Adjusted Model IRR (95% CI)	Partially Adjusted Model IRR (95% CI)	Fully Adjusted Model IRR (95% CI)
Probability of working full-time at age 62	0.87 (0.77, 0.97)*	0.89 (0.79, 0.99)*	1.25 (1.12, 1.39)***	1.24 (1.11, 1.38)***
Covariates				
Age	1.00 (0.99, 1.02)	1.00 (0.99, 1.01)	0.97 (0.96, 0.99)***	0.98 (0.97, 0.99)**
Male	0.97 (0.88, 1.06)	0.93 (0.85, 1.02)	0.91 (0.84, 0.99)*	0.86 (0.79, 0.94)**
Married civil status	0.87 (0.78, 0.96)**	0.82 (0.73, 0.91)***	0.90 (0.82, 0.99)*	0.89 (0.81, 0.98)*
Non-White	1.14 (1.01, 1.29)*	1.09 (0.96, 1.23)	1.05 (0.95, 1.17)	0.98 (0.89, 1.09)
Educational attainment				
Less than high school	ref.	ref.	ref.	ref.
High school graduate or GED	0.96 (0.86, 1.07)	1.04 (0.93, 1.16)	0.76 (0.68, 0.83)***	0.87 (0.78, 0.96)**
Some college, college graduate, or more	0.75 (0.67, 0.85)***	0.86 (0.76, 0.97)*	0.67 (0.59, 0.75)***	0.80 (0.71, 0.90)***
Current smoker	1.20 (1.09, 1.32)***	1.10 (1.01, 1.22)*	1.20 (1.10, 1.31)***	1.08 (0.98, 1.18)
Obese	1.14 (1.03, 1.26)*	1.02 (0.92, 1.13)	0.99 (0.91, 1.09)	0.92 (0.84, 1.01)
Requires help with one or more BADL	1.29 (1.09, 1.53)**	1.12 (0.94, 1.13)	1.43 (1.24, 1.64)***	1.19 (1.03, 1.37)*
Wave 2 depressive symptoms	1.30 (1.27, 1.32)***	1.25 (1.23, 1.28)***	1.26 (1.24, 1.28)***	1.21 (1.18, 1.23)***
Employed full-time	1.04 (0.89, 1.21)	1.03 (0.88, 1.19)	0.92 (0.84, 1.00)	0.93 (0.85, 1.02)
Household non-housing net worth	0.99 (0.98, 1.01)	0.99 (0.98, 1.01)	1.00 (0.99, 1.01)	1.00 (0.98, 1.01)
Household income (respondent + spouse)	1.00 (0.99, 1.02)	1.01 (1.00, 1.03)	1.00 (0.99, 1.01)	1.01 (0.99, 1.02)
Change in household non-housing net worth	--	1.00 (0.98, 1.00)	--	1.00 (0.99, 1.01)
Self-rated health at age 62				
Poor	ref.	ref.	ref.	ref.
Fair	--	0.68 (0.57, 0.81)***	--	0.67 (0.60, 0.76)***
Good	--	0.48 (0.40, 0.58)***	--	0.44 (0.39, 0.51)***
Very Good	--	0.37 (0.33, 0.44)***	--	0.35 (0.30, 0.41)***

	Working full-time at age 62 (N = 2,157)		Not working full-time at age 62 (N = 2,084)	
	Partially Adjusted Model	Fully Adjusted Model	Partially Adjusted Model	Fully Adjusted Model
	IRR (95% CI)	IRR (95% CI)	IRR (95% CI)	IRR (95% CI)
Excellent	--	0.27 (0.21, 0.34) ***		0.31 (0.26, 0.37) ***
Spouse is employed (when respondent is age 62)	--	1.11 (0.99, 1.25)	--	0.94 (0.85, 1.06)

*
p<.05

**
p<.01

***
p<.001;

IRR=incident rate ratio; CI=confidence interval