

RETIREMENT, PERSONALITY, AND WELL-BEING

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This study investigates how two sources of individual heterogeneity—personality and gender—impact the well-being effects of retirement. Using data on older men and women from the British Household Panel Survey and its continuation, Understanding Society, we estimate the causal effect of retirement on satisfaction with overall life and domains of life in the presence of personality characteristics. As retirement is often considered to be a choice and thus may be endogenous to individual-level characteristics, we use the eligibility ages for basic state pension in the United Kingdom as instruments for retirement. We find that retirement increases leisure satisfaction of both males and females but not necessarily life satisfaction and income satisfaction. We further show that certain personality characteristics affect the well-being of female retirees. For males, however, personality does not seem to matter in how they cope with retirement. (JEL I31, J26, A12, C23)

I. INTRODUCTION

In recent years, industrialized countries have seen a substantial rise in the proportion of older

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population. As medical advancement and better living conditions allow people to live longer many people spend a greater proportion of their life in retirement. At the individual level, retirement is a milestone that often leads to changes in health, social relations, finances, and the allocation of time and, hence, in individual satisfaction with different domains of life. In this article, we investigate how two sources of individual heterogeneity—personality and gender—impact the well-being effect of retirement.

Comparatively little work has examined the well-being effects of retirement but the findings on what exists are quite diverse, with some studies identifying a positive retirement impact (e.g., Charles 2004; Johnston and Lee 2009; Latif 2011), and other studies finding little impact (e.g., Blanchflower and Oswald 2004; Horner 2014; Kapteyn, Lee, and Zamarro 2013). In relation to satisfaction with different areas of an individual's life, there is but one prior study (Bonsang and Klein 2012) that is closely related to our analysis. By using the German Socio-Economic Panel (GSOEP), they showed

ABBREVIATIONS

2SLS: Two-Stage Least Squares
 2SRI : Two-Stage Residual Inclusion
 BHPS: British Household Panel Survey
 GBP: Pound Sterling
 GSOEP: German Socio-Economic Panel
 IV: Instrumental Variable
 UnSoc: Understanding Society

that voluntary retirement has a negligible effect on overall life satisfaction, but satisfaction with leisure and household income is offsetting; retirement improves leisure satisfaction and decreases satisfaction with household income. Results were very different for those who retire involuntarily; retirement has a strong and negative impact on life satisfaction, with a smaller positive impact on leisure satisfaction and more of a negative impact on satisfaction with income.

In this article, we add to their analysis in three ways. First, we consider two additional sources of individual heterogeneity—gender and personality—which may help to better explain factors that impact satisfaction post retirement. In addition, we use a different data set, the British Household Panel Survey (BHPS) and its continuation Understanding Society (UnSoc), a nation-wide longitudinal data set from the United Kingdom, allowing us to see if cultural differences between two countries might cause retirement to have differential impacts on satisfaction.

The economic literature incorporating personality as a source of individual heterogeneity for well-being is relatively new. Work by Binder and Coad (2011), Clark et al. (2005), and Budria (2013) revealed differential effects across the well-being distribution, but offered little insight on why it exists. But other studies showed that personality affects subjective well-being (Headey 2008; Myers and Diener 1995; Rammstedt 2007; Steel, Schmidt, and Shultz 2008), and a number of studies have looked at how personality affects coping with diverse life events such as unemployment (Boyce, Wood, and Brown 2010), income changes (Boyce and Wood 2011b; Budria and Ferrer-i-Carbonell 2012; Soto and Luhmann 2013), marriage, childbirth and widowhood (Yap, Anusic, and Lucas 2012), illness (Kesavayuth, Rosenman, and Zikos 2015), and disability (Boyce and Wood 2011a).

Although individual heterogeneity constitutes a large portion (44%–52%) of the variation in well-being (Lykken and Tellegen 1996), there has been little analysis of how personality affects well-being after retirement. The only previous analysis we were able to find was Robinson, Demetre, and Corney (2010) who utilized a one time-point online survey design with 365 participants to test how the “Big Five” personality traits¹ affected retirees’ life satisfaction. They showed that three personality traits—agreeableness,

conscientiousness, and low neuroticism—were most significant predictors of satisfaction with overall life among retirees. We improve on their approach by adding personality characteristics² to a fixed effects panel data analysis. We also perform separate estimations by gender. Besides providing a better understanding of how personality affects the impact of retiring on an individual’s well-being, our approach allows us to assess the extent to which such personality effects might differ between males and females.

Our empirical approach takes into account that retirement, often considered as a choice, may be endogenous. Causality could run in reverse: individuals with lower levels of well-being might be prone to retire earlier. There may also be omitted variables affecting both the retirement decision and well-being such as an individual’s discount factor. Furthermore, the relationship between retirement and well-being might be confounded by measurement error in retirement itself. In this study, we address these empirical issues by using an instrumental variable (IV) strategy, which exploits the eligibility ages for basic state pension in the United Kingdom as instruments for retirement, an approach that has been successfully implemented by others (e.g., Bonsang, Adam, and Perelman 2012; Charles 2004; Coe and Zamarro 2011; Horner 2014; Latif 2011; Mazzonna and Peracchi 2014).

Overall, our approach amounts to asking whether personality can affect how well people cope with retirement, and whether such personality impact might depend upon gender. Our findings reject the hypothesis of “homogeneous” behavior across distinct subgroups of individuals, suggesting that certain personality characteristics affect the well-being of female retirees, but personality does not seem to matter in how males cope with retirement. Our findings thus provide some of the first longitudinal evidence on the relationship between retirement, gender, personality, and well-being.

This study is structured as follows. Section II reviews previous research on personality, especially how it relates to retirement. Section III discusses our empirical model and strategy. Section IV describes the data. Section V presents the results. Section VI considers extensions to our analysis. Section VII concludes the study.

1. The “Big Five” personality characterization is discussed later in this study.

2. We also use the Big Five characterization of personality, which was included in wave 15 of the BHPS and in wave 3 of UnSoc.

II. PERSONALITY AND RETIREMENT

A widely used model for describing individual personality is the Big Five factor model (Goldberg 1993; McCrae and Costa 1987). It views personality as a multi-faceted construct consisting of five broad dimensions: agreeableness, conscientiousness, extraversion, neuroticism, and openness. A review of the Big Five model can be found in John and Srivastava (1999). As we noted earlier, Robinson, Demetre, and Corney (2010) use the Big Five construct in a cross-sectional analysis of retirement satisfaction, and found that of the Big Five personality traits, agreeableness and conscientiousness were positively associated with life satisfaction after retirement, while neuroticism was negatively associated with life satisfaction in retirement. Based on this study and the content of each personality trait, we hypothesize what could be the specific role of each personality trait when individuals retire, potentially providing a better understanding of how distinct subgroups of individuals react to the experience of retiring.

Conscientiousness describes the attribute of self-control, the desire for success, order, and persistence. Previous studies have found that individuals high in conscientiousness tend to pay more attention to retirement preparations compared to typical individuals (Reis and Gold 1993). We therefore expect that conscientiousness might positively mediate the link between retirement and well-being, a hypothesis that also appears to be consistent with earlier work suggesting that conscientiousness is associated with proactive motivation (Colquitt and Simmering 1998).

Agreeableness reflects the quality of interpersonal relationships; while extraversion relates to the quantity and intensity of relationships (DeNeve and Cooper 1998). Individuals scoring high on agreeableness and/or extraversion are more likely than typical individuals to enjoy a network of supportive relations at their workplace. On retiring, however, they may lose this network of coworkers and thereby suffer a drop in their well-being. It is also possible that individuals higher in agreeableness and/or extraversion, who tend to be more sociable, likeable, and outgoing, may have an existing network of support outside of work, or will be able to develop a wider and stronger network of supportive relationships after retiring (Reis and Gold 1993; Robinson, Demetre, and Corney 2010). As both positive and negative effects are

possible, it is largely an empirical question to determine which effect is stronger.

Openness captures attributes like flexibility, creativity, curiosity, and preference for novelty. Individuals who score high on openness may be more willing than typical individuals to try “new” intellectual and other challenges, which could enhance their life satisfaction in retirement (Reis and Gold 1993). On leaving work, however, individuals with high openness levels may have fewer opportunities for exposing themselves to work-related challenges, dampening any expectations about a possible mediating effect of openness on the impact of retirement on well-being. Hence, again it appears to be an empirical question about which impact is stronger.

Neuroticism is associated with characteristics like emotional instability and a proneness to anxiety. Past research has suggested that individuals who score high on neuroticism may not consistently prepare for their retirement (Reis and Gold 1993). This leads us to hypothesize that neuroticism might negatively mediate the link between retirement and well-being. Consistent with this hypothesis, previous studies have found that highly neurotic individuals are more prone to making negative appraisals of their life situation, which could lead to lower well-being (e.g., Gunthert, Cohen, and Armeli 1999).

III. MODEL AND ESTIMATION

Let SWB_{it} be subjective well-being (satisfaction with life overall, satisfaction with income, or satisfaction with free time), where i denotes the set of individuals who are observed at different time-points, t . The linear fixed effects model is given by:

$$(1) \quad SWB_{it} = \mu_t + \beta r_{it} + \alpha x_{it} + \rho z_i + a_i + \varepsilon_{it},$$

where μ_t is an intercept, r_{it} is a dummy variable indicating whether individual i is retired at time t , x_{it} is a vector of predictor variables that vary over time, and z_i is a vector of predictor variables that do not vary over time.

There are two “error terms” in Equation (1), the person-specific error, a_i , and the idiosyncratic error, ε_{it} . The person-specific error varies only across individuals and captures the combined effect on SWB_{it} of all unobserved variables that are time-invariant and are known as “fixed effects.” The idiosyncratic error can differ among individuals as well as time-points and represents random variation (which may be because of unmeasured variables) at each point in time.

Most empirical studies typically assume that an individual's personality is a component of the person-specific error, a_i (e.g., Bonsang and Klein 2012; Frijters, Haiken-DeNew, and Shields 2004; Latif 2011). When personality is treated as such a "fixed effect," it is no longer possible to obtain estimates for the independent effects of an individual's personality characteristics on her/his well-being. Similar to the study of Boyce, Wood, and Powdthavee (2013), this study treats personality instead as a time-varying characteristic, x_{it} . To test our hypothesis that the well-being effect of retirement might depend upon personality, we modify the fixed effects model in Equation (1) by including interactions between retirement status, r_{it} , and personality characteristics.³ Our fixed effects model therefore becomes

$$(2) \quad SWB_{it} = \mu_t + \beta r_{it} + \gamma p_{it} + \delta (p_{it} \cdot r_{it}) \\ + \theta x_{it} + \rho z_i + a_i + \varepsilon_{it},$$

where p_{it} is the vector of personality characteristics. Because unobserved heterogeneity can include more factors than just the individual's personality (Boyce 2010), the fixed effects estimator is likely the correct choice even when personality variables are available. Using the fixed effects estimator has the additional advantage of controlling for cohort heterogeneity that has been highlighted by previous work (e.g., Jürges 2003).

As discussed in Section I, retirement might be endogenous for several reasons: reverse causality, omitted factors that might affect an individual's decision to retire and his/her well-being, and/or measurement error in retirement itself. Although the fixed effects estimator controls for time-invariant unobserved heterogeneity, it neither accounts for the potentially confounding effects of heterogeneity that is specific to particular time points nor eliminates potential bias because of reverse causality or measurement error in retirement itself.

To deal with these issues, we use an IV approach. To be valid, our instruments must be highly correlated with the individuals' decision to retire but only affect individuals' well-being through the effect of retirement. Previous studies have used the eligibility ages for state pension as instruments for retirement, showing that they are indeed strong predictors of retirement behavior (e.g., Bonsang, Adam, and Perelman 2012;

Latif 2011; Mazzonna and Peracchi 2014). As such eligibility ages are determined by laws and thus apply to all males and females who reach certain age thresholds, being eligible is exogenous to the individual when controlling for age (Horner 2014). In consequence, there is no reason to suspect that the eligibility ages for state pension, our instruments, will have any direct impact on individuals' well-being.

According to OECD (2011), the typical retirement age is the age at which a person may be entitled to receive superannuation or other government benefits. In our case, we use the age at which individuals can claim the basic state pension.⁴ In the United Kingdom, men over the age of 65 and women over the age of 60 were entitled to claim state pension until 2010.⁵ Our instrument is thus a dummy variable indicating if an individual has reached the relevant eligibility age for basic state pension. Although our identification strategy accounts for likely changes in the eligibility ages for retirement which occurred after 2010 for women following the Pensions Act 1995,⁶ it relies more heavily on the discontinuous change in the likelihood to retire in the years surrounding the eligibility ages, as shown in Figure 1.

Our empirical approach also takes into account that personality might be correlated with characteristics specific to each individual including those of cognitive ability and mental health. It is likely that the presence of such correlations would confound the relationship between retirement and well-being, rendering the estimated interaction effects of personality biased. One potential way of overcoming this issue is to include more interaction terms in our model, which would help account for this

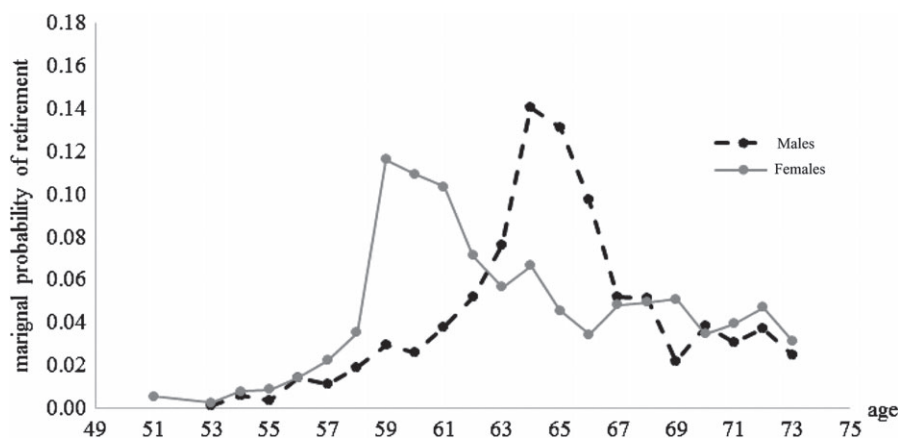
4. In the United Kingdom, there are three divisions of pensions: basic state pensions, occupational pensions, and personal pensions. Both occupational and personal pensions depend on a variety of individual characteristics including former income and years in the workforce. Therefore, these two types of pensions are likely to be endogenous to the individual. By contrast, eligibility for basic state pension is based on reaching certain age thresholds for males and females, which are determined by laws and thus apply to all individuals.

5. From April 2010, the age for women's state pension eligibility has gradually been harmonized to match that for men. The eligibility age of the new basic state pension for both males and females will rise to 68 by no later than 2046.

6. According to the Pensions Act 1995, for women born after April 6, 1950, and until December 5, 1953, for every 1 month interval, the pension age for the individual will be increased by 2 months. For those born after December 5, 1953, both males and females, the eligibility age for state pension will rise to 68 according to the Pensions Act 2007.

3. When additional interactions between personality and dummy variables for unemployment, disability, and family care were included in the model, we found our main results to be unchanged.

FIGURE 1
Marginal Probability of Retirement by Age



Note: BHPS waves 15–21

additional source of unobserved heterogeneity.⁷ We therefore interact each individual's personality characteristics with his/her educational attainments and a dummy variable indicating if the individual suffers from any health problems. Within the model given by Equation (2), our parameters of interest are the coefficient β on the retirement indicator, the vector γ on personality characteristics, and the vector on the interaction terms between personality and retirement.

IV. DATA

Our data source is the BHPS and its continuation UnSoc, a new and more wide-ranging socioeconomic panel survey. The BHPS, which was collected during the period 1991–2008, is a longitudinal household survey representative of the population that resides in the United Kingdom. BHPS has been incorporated into UnSoc from the second wave of the UnSoc interviews onwards, and is often referred to as BHPS wave 20. Out of just over 8,000 BHPS participants, almost 6,700 joined the new survey, UnSoc. To test how personality impacts the well-being effect of retirement, our sample consists of individuals between 50 and 75 years old. Alongside information about socioeconomic measures and measures related to satisfaction with different

domains of life, the BHPS and UnSoc collected data on personality. Specifically, personality measures were collected in the BHPS wave 15 and in the UnSoc wave 3 (BHPS wave 21, hereafter), allowing us to construct a two-wave panel.

Starting with an unbalanced panel of 9,289 observations, we eliminated respondents with missing answer for the questions required for our analysis. This process of constructing our data set resulted in 5,597 unique individuals (2,563 males and 3,034 females) and 7,837 observations.

A. Satisfaction with Life and Other Domains

In the BHPS, respondents are asked to evaluate satisfaction with eight different domains of life, and satisfaction with life overall. The question on satisfaction with overall life was placed strategically in the questionnaire, after respondents first evaluated how satisfied they are with the eight specific areas. In UnSoc, respondents are asked to evaluate satisfaction with three domains of life (health, income, and leisure) as well as satisfaction with life overall. Answers are coded on a scale of 1 to 7, where 1 indicates "not satisfied at all" and 7 indicates "completely satisfied."

Because retirement is usually accompanied by large changes in income and leisure, we use satisfaction with income and the amount of free time (leisure) as two of our dependent variables in estimating Equations (1) and (2). We also use overall life satisfaction as a dependent variable to reveal how personality affects overall satisfaction after

7. We would like to thank an anonymous referee for pointing out the importance of including additional interaction terms in our model.

retirement. As is common in the well-being literature, we treat the responses as cardinal.⁸ To aid the interpretation of our results, we standardized the satisfaction scores by gender subgroup so that the mean is 0 and variance is 1.

B. Retirement

We define an individual who is currently engaged in paid work or self-employed as “working.” Among those who are not working, we distinguish those who reported to be either unemployed, disabled, or taking care of their family from those who reported to be retired.⁹ Among the 7,837 observations used in our analysis 39%, or 3,057 observations (1,279 men and 1,778 women), reported themselves as retired. In the retired category, there were in total 2,415 unique individuals (1,020 men and 1,395 women). Of those retired, 1,144 unique individuals (490 men and 654 women) were retired only in wave 15, and 629 (270 men and 359 women) were retired only in wave 21. On average, about 2% of the respondents said that they were unemployed, 6% disabled, and 5% were taking care of their family.

A total of 4,424 observations (2,047 men and 2,377 women), or 2,212 unique individuals (1,024 men and 1,188 women), were included in both waves. Similarly, 642 unique individuals (259 men and 383 women) reported themselves as retirees in both waves. We also had 435 unique individuals (243 men and 192 women) working in both waves.

As explained earlier, to identify the causal effect of retirement on well-being, we use the gender-specific eligibility ages for basic state pension in the United Kingdom to construct an instrument for retired. The instrument was used for both the main variable and in the five interaction terms in Equation (2).

C. Personality Measures

Personality measures were obtained in the BHPS waves 15 and 21 by using a 15-item inventory (Appendix). Each personality dimension is captured by the answers to three questions that are coded on a scale of 1 to 7, where 1 indicates

“does not apply to me at all” and 7 indicates “applies to me perfectly.” The possible value range for each trait’s total score is from 3 to 21. To aid the interpretation of our results, we standardized personality scores by gender subgroup so that the mean is 0 and variance is 1. The Cronbach α reliabilities across our sample (for both waves 15 and 21) were .53 (agreeableness), .52 (conscientiousness), .54 (extraversion), .69 (neuroticism), and .67 (openness). As a basis of comparison, in the GSOEP Survey, which also collected personality measures, the values of the α reliabilities were between .50 and .66 (Soto and Luhmann 2013). These relatively low α reliabilities are likely the result of using a shorter version of the Big Five inventory (John, Donahue, and Kentle 1991; Tavares 2010). Previous research by Gerlitz and Schupp (2005) shows that brief scales of the Big Five inventory demonstrate both strong internal coherence and satisfactory reliability, while Gosling, Rentfrow, and Swann (2003) provide empirical evidence supporting the use of 5- and 10-item inventories for assessing personality in the Big Five construct.

D. Other Explanatory Variables

Our analysis controls for the potentially confounding effects of socioeconomic variables that may be correlated with retirement status and personality while, at the same time, influencing satisfaction with overall life and domains of life. Specifically, in all our estimations, we include as additional explanatory variables gender, age, household income, marital status (a set of dummy variables with married as a reference category), health problems (having at least one physical or mental illness), educational attainment (a binary indicator with less than first degree as a reference category), number of children, and dummy variables for region and year. Table 1 provides (non-standardized) descriptive statistics.¹⁰

V. RESULTS

A. Preliminary Results

In Table 2, we present preliminary results using the actual responses for “retired” rather than instruments. For contrast, we show estimates without interactions between personality and retirement (Equation (1)) and estimates

8. Treating Likert responses as ordinal or cardinal when used as the dependent variable in regressions does not lead to important differences in the conclusions (Boyce and Wood 2011b; Ferrer-i-Carbonell and Frijters 2004; Latif 2011).

9. The current definition of retirement is consistent with earlier work by Latif (2011), Coe et al. (2012), and Mazzonna and Peracchi (2014), among others.

10. “First” is the term used in the United Kingdom’s educational system for an undergraduate degree.

TABLE 1
Summary Statistics by Gender (Nonstandardized)

Variable	Males					Females				
	Obs	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max
Retired	3,599	0.355	0.479	0	1	4,238	0.420	0.494	0	1
Normal retired	3,599	0.276	0.447	0	1	4,238	0.389	0.487	0	1
Early retired	3,599	0.079	0.270	0	1	4,238	0.031	0.173	0	1
Disabled	3,599	0.066	0.248	0	1	4,238	0.060	0.237	0	1
Family care	3,599	0.004	0.064	0	1	4,238	0.085	0.278	0	1
Unemployed	3,599	0.026	0.158	0	1	4,238	0.019	0.138	0	1
Satisfaction with overall life	3,599	5.190	1.385	1	7	4,238	5.199	1.460	1	7
Satisfaction with income	3,599	4.416	1.675	1	7	4,238	4.487	1.707	1	7
Satisfaction with leisure time	3,599	4.992	1.699	1	7	4,238	5.029	1.716	1	7
Age	3,599	61.098	7.234	50	75	4,238	60.862	7.150	50	75
Real household income (GBP, base year = 2014)	3,599	42,490	32,959	0	290,712	4,238	37,558	29,727	0	307,222
Married couple	3,599	0.793	0.405	0	1	4,238	0.696	0.460	0	1
Separated	3,599	0.045	0.208	0	1	4,238	0.119	0.324	0	1
Divorced	3,599	0.077	0.267	0	1	4,238	0.123	0.328	0	1
Widowed	3,599	0.007	0.085	0	1	4,238	0.008	0.088	0	1
Never been married	3,599	0.078	0.267	0	1	4,238	0.054	0.227	0	1
Health: having health problem	3,599	0.601	0.490	0	1	4,238	0.637	0.481	0	1
Education: having at least first degree	3,599	0.126	0.332	0	1	4,238	0.101	0.301	0	1
Number of kids living in the household	3,599	0.154	0.519	0	7	4,238	0.086	0.359	0	7
Agreeableness	3,599	16.088	3.103	3	21	4,238	17.233	2.887	3	21
Conscientiousness	3,599	16.085	3.235	3	21	4,238	16.409	3.422	3	21
Extraversion	3,599	12.891	3.614	3	21	4,238	13.485	3.824	3	21
Neuroticism	3,599	9.334	3.752	3	21	4,238	11.524	4.181	3	21
Openness	3,599	13.260	3.765	3	21	4,238	12.797	4.006	3	21

allowing for retirement–personality interactions (Equation (2)). Because these estimates use fixed effects, they do not account for the potential endogeneity of retirement. The estimates provide some initial evidence that certain personality characteristics might matter, both among retirees and other people, for how satisfied they are with overall life and the income and leisure domains of life. These preliminary estimates are not separated by gender.

Columns (1), (3), and (5) present the estimates without the personality interactions. Similar to the study of Bonsang and Klein (2012), being retired is associated with higher satisfaction with one's time spent in leisure (at p values $<.01$) when compared with those working.¹¹ It is also associated with higher life satisfaction but lower income satisfaction, although the two effects are statistically insignificant at conventional levels. These results continue to hold when

retirement–personality interactions are added to the model. Furthermore, we find that, in terms of personality, agreeableness and neuroticism mattered most significantly, although the well-being effects of neuroticism generally became smaller in magnitude and significance when personality interactions were added. In terms of the indirect effects of personality, our estimates in columns (2), (4), and (6) suggest a negative coefficient on the interaction between retirement and conscientiousness with respect to overall life satisfaction and leisure satisfaction.

As the findings from earlier studies suggest that personality differs between genders (e.g., Bowles, Gintis, and Osborne 2001; Boyce and Wood 2011b) and the labor market experiences of males and females are likely to be different, our next step is to estimate Equation (2) separately by gender.¹² Our findings in Table 3 provide initial evidence that personality works differently for males and females. Specifically, the

11. Somewhat surprisingly, those individuals who are disabled or out of the labor force for family care, as well as those unemployed, are also more satisfied with their leisure than those working. The unemployed are also less satisfied with their income.

12. Across all our regressions, the Chow-test statistic is highly significant (the p value is zero to four decimal places), which leads us to soundly reject the null hypothesis that males and females do not follow different well-being models.

TABLE 2
Fixed Effect Estimates of Retirement and Personality on Life and Domain Satisfaction

Dependent Variables	Overall Life		Income		Leisure	
Standardized Satisfaction of:	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables						
Retired	0.0873 (0.0651)	0.0985 (0.0645)	-0.0461 (0.0614)	-0.0505 (0.0619)	0.440*** (0.0710)	0.447*** (0.0706)
Disabled	-0.00443 (0.117)	0.0397 (0.117)	-0.101 (0.103)	-0.0852 (0.102)	0.578*** (0.125)	0.610*** (0.127)
Family care	-0.0587 (0.125)	-0.0558 (0.126)	-0.118 (0.128)	-0.121 (0.128)	0.295** (0.150)	0.287* (0.152)
Unemployed	-0.103 (0.137)	-0.0683 (0.135)	-0.362*** (0.136)	-0.322** (0.137)	0.228* (0.134)	0.263** (0.133)
Agreeableness	0.0938*** (0.0313)	0.0993** (0.0498)	0.0537* (0.0291)	0.111** (0.0454)	0.0799*** (0.0305)	0.0544 (0.0490)
Conscientiousness	0.0572* (0.0298)	0.0422 (0.0497)	0.0742*** (0.0286)	0.00524 (0.0472)	0.00706 (0.0309)	0.0425 (0.0517)
Extraversion	0.0221 (0.0316)	-0.0413 (0.0481)	-0.0152 (0.0304)	-0.0203 (0.0462)	0.0232 (0.0327)	0.000518 (0.0498)
Neuroticism	-0.150*** (0.0345)	-0.157*** (0.0544)	-0.0889*** (0.0343)	-0.00166 (0.0519)	-0.0919*** (0.0347)	-0.0754 (0.0541)
Openness	0.0381 (0.0334)	0.0721 (0.0560)	0.0143 (0.0321)	0.0144 (0.0537)	0.0540 (0.0352)	0.0502 (0.0557)
Retired × Agreeableness		-0.0352 (0.0522)		-0.0115 (0.0483)		-0.0430 (0.0507)
Retired × Conscientiousness		-0.124*** (0.0474)		-0.0663 (0.0471)		-0.150*** (0.0502)
Retired × Extraversion		0.0208 (0.0460)		-0.00119 (0.0446)		0.0472 (0.0509)
Retired × Neuroticism		0.0824* (0.0497)		-0.0313 (0.0497)		0.0634 (0.0516)
Retired × Openness		0.0606 (0.0522)		-0.0159 (0.0513)		0.0617 (0.0528)
Constant	1.551*** (0.576)	1.475** (0.609)	1.712 (1.160)	1.849 (1.192)	0.724 (1.281)	0.692 (1.312)
Observations	7,837	7,837	7,837	7,837	7,837	7,837

Notes: Robust standard errors are in parentheses. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

fixed effects estimates in columns (3) and (6) suggest that the positive association between retirement and leisure satisfaction is found for both males and females. However, the positive effect of agreeableness on overall life satisfaction and income satisfaction is largely driven by females, while the negative effect of neuroticism on life and leisure satisfaction is found only for males. While openness did not matter in the pooled sample, it now appears to enhance males' satisfaction with overall life. Our estimates also suggest that the negative interaction between retirement and conscientiousness is prevalent mostly among females. There is also evidence that openness has opposite impacts on how male and female retirees view life satisfaction, with a negative estimate

for males and a statistically stronger positive estimate for females.

B. Main Results

In this subsection, we treat retirement as endogenous. Using the eligibility ages for the United Kingdom's basic state pension to construct an instrument for retirement, we conducted a two-stage least squares (2SLS) analysis. Our estimates reported in Table 4 suggest that, among individuals with average levels of personality traits (i.e., equal to zero), retirement has a positive effect on leisure satisfaction. The corresponding coefficient estimate is significant at p values less than .05, both for males and females. For typical

TABLE 3

Fixed Effect Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender

Dependent Variables	Males			Females		
	Overall Life	Income	Leisure	Overall Life	Income	Leisure
Standardized Satisfaction of:	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables						
Retired	0.168* (0.0886)	0.0379 (0.0868)	0.564*** (0.0968)	0.0299 (0.0919)	-0.136 (0.0866)	0.325*** (0.104)
Disabled	-0.00760 (0.145)	-0.111 (0.155)	0.752*** (0.148)	0.120 (0.175)	-0.0816 (0.130)	0.480** (0.200)
Family care	0.470 (0.748)	1.165** (0.537)	0.675 (1.145)	-0.0935 (0.133)	-0.198 (0.135)	0.209 (0.160)
Unemployed	-0.0501 (0.180)	-0.247 (0.182)	0.416** (0.161)	0.0160 (0.216)	-0.304 (0.218)	0.0851 (0.245)
Agreeableness	-0.0130 (0.0739)	0.0952 (0.0666)	0.0106 (0.0711)	0.165** (0.0674)	0.110* (0.0617)	0.0660 (0.0696)
Conscientiousness	0.0605 (0.0654)	-0.00764 (0.0671)	0.101 (0.0681)	0.0151 (0.0714)	0.0210 (0.0641)	-0.0284 (0.0758)
Extraversion	-0.0505 (0.0728)	-0.0879 (0.0623)	-0.0393 (0.0706)	-0.0511 (0.0643)	0.0119 (0.0640)	0.0185 (0.0699)
Neuroticism	-0.228*** (0.0717)	0.00271 (0.0713)	-0.184*** (0.0700)	-0.118 (0.0747)	-0.0258 (0.0721)	0.0111 (0.0764)
Openness	0.232*** (0.0783)	0.0936 (0.0797)	0.0396 (0.0789)	-0.0448 (0.0760)	-0.0318 (0.0703)	0.0698 (0.0770)
Retired × Agreeableness	0.00193 (0.0782)	-0.0916 (0.0663)	-0.0576 (0.0739)	-0.0499 (0.0698)	0.0541 (0.0659)	-0.0349 (0.0683)
Retired × Conscientiousness	-0.0153 (0.0725)	0.0102 (0.0694)	-0.129* (0.0750)	-0.188*** (0.0656)	-0.129** (0.0644)	-0.141** (0.0688)
Retired × Extraversion	0.161** (0.0645)	0.0491 (0.0640)	0.188** (0.0742)	-0.0505 (0.0611)	-0.0131 (0.0592)	-0.0374 (0.0670)
Retired × Neuroticism	0.120* (0.0704)	-0.0700 (0.0673)	0.0896 (0.0719)	0.0515 (0.0687)	0.00951 (0.0693)	0.0336 (0.0717)
Retired × Openness	-0.134* (0.0767)	-0.0816 (0.0738)	-0.0577 (0.0768)	0.191*** (0.0705)	0.0202 (0.0685)	0.120 (0.0730)
Constant	-0.421 (0.408)	-0.992*** (0.376)	-2.053*** (0.470)	1.618*** (0.430)	3.572*** (0.632)	3.565*** (0.626)
Observations	3,599	3,599	3,599	4,238	4,238	4,238

Notes: Robust standard errors are in parentheses. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

males, we also find that retirement raises income satisfaction, although this effect is significant only at the 10% level. Retirement does not appear to have a significant effect on life satisfaction of either average males or females. Importantly, the lack of precision in the estimates of the causal effect of retirement on income satisfaction and life satisfaction does not seem to be due to weak instruments. The first-stage *F*-statistics for the joint significance of the excluded instruments are all above the rule-of-thumb value of 10 suggested by Staiger and Stock (1997), which causes us to reject the null hypothesis of weak IVs.¹³

13. The first-stage *F*-statistics for the joint significance of the excluded instruments in the retirement regressions are 14.02 (16.93) for males (females).

The estimates reported in Table 4 show some evidence of gender differences in how personality impacts satisfaction with overall life and domains of life. Among females, we find that a standard deviation increase in agreeableness raises income satisfaction by about 0.151 standard deviations (at *p* values <.05) and overall life satisfaction by 0.13 standard deviations (although at *p* values <.10). However, being one standard deviation above the mean in neuroticism lowers females' life satisfaction by 0.164 standard deviations. Neuroticism appears to have similar negative effects on both life satisfaction and leisure satisfaction of males. There is also a positive coefficient on openness, suggesting that a standard deviation increase in this personality

TABLE 4

Fixed Effect IV (2SLS) Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender

Dependent Variables	Males			Females		
	Overall Life (1)	Income (2)	Leisure (3)	Overall Life (4)	Income (5)	Leisure (6)
Standardized Satisfaction of:						
Independent variables						
Retired	0.207 (0.389)	0.759* (0.390)	0.805** (0.399)	0.198 (0.325)	-0.301 (0.318)	0.828** (0.349)
Disabled	0.0310 (0.287)	0.333 (0.288)	0.940*** (0.294)	0.276 (0.275)	-0.189 (0.269)	0.859*** (0.295)
Family care	0.464 (0.619)	1.451** (0.622)	0.686 (0.635)	0.0715 (0.249)	-0.321 (0.243)	0.548** (0.266)
Unemployed	-0.00589 (0.212)	-0.0538 (0.213)	0.466** (0.218)	0.128 (0.265)	-0.359 (0.259)	0.366 (0.284)
Agreeableness	-0.0285 (0.0747)	0.105 (0.0750)	0.00186 (0.0766)	0.130* (0.0734)	0.151** (0.0718)	0.0708 (0.0787)
Conscientiousness	0.0764 (0.0884)	0.0615 (0.0888)	0.0575 (0.0907)	0.105 (0.0789)	0.0160 (0.0772)	0.00513 (0.0846)
Extraversion	-0.0414 (0.0821)	-0.104 (0.0824)	0.0145 (0.0842)	-0.00107 (0.0845)	0.0573 (0.0827)	0.0244 (0.0906)
Neuroticism	-0.258*** (0.0815)	0.00447 (0.0817)	-0.218*** (0.0836)	-0.164** (0.0834)	-0.0790 (0.0816)	-0.0617 (0.0894)
Openness	0.203** (0.0839)	0.0661 (0.0842)	0.0737 (0.0861)	-0.102 (0.0911)	-0.0206 (0.0891)	0.0169 (0.0976)
Retired × Agreeableness	0.0231 (0.123)	-0.214* (0.124)	-0.0427 (0.126)	-0.0512 (0.101)	-0.0241 (0.0992)	-0.0978 (0.109)
Retired × Conscientiousness	-0.0451 (0.132)	-0.0170 (0.133)	0.0293 (0.136)	-0.314*** (0.104)	-0.126 (0.102)	-0.167 (0.112)
Retired × Extraversion	0.142 (0.134)	0.0721 (0.135)	0.0241 (0.138)	-0.122 (0.104)	-0.0846 (0.102)	-0.0600 (0.112)
Retired × Neuroticism	0.195 (0.129)	-0.00300 (0.130)	0.167 (0.133)	0.121 (0.114)	0.0831 (0.112)	0.166 (0.123)
Retired × Openness	-0.0476 (0.135)	-0.0305 (0.136)	-0.143 (0.139)	0.282** (0.112)	0.0310 (0.110)	0.219* (0.120)
Constant	-1.015 (1.123)	-1.786 (1.127)	-2.232* (1.152)	1.440 (1.485)	3.781*** (1.453)	2.824* (1.592)
Observations	3,571	3,571	3,571	4,204	4,204	4,204

Notes: Standard errors are in parentheses. When corrected to robust standard errors the results hold. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

trait raises males' overall life satisfaction by 0.203 standard deviations.

The results of Table 4 show some evidence of retirement–personality interactions for females but not for males. For females, we find a negative coefficient on the interaction between retirement and conscientiousness, suggesting that female retirees scoring high in conscientiousness (i.e., 1 *SD* above the mean) are estimated to experience a reduction in life satisfaction by 0.314 standard deviations compared with other females. Female retirees high in openness tend to enjoy greater satisfaction with overall life by 0.282 standard deviations compared with other females. Again, the corresponding first-stage *F*-statistics for the excluded instruments are sufficiently

large, suggesting rejection of the null hypothesis of weak IVs.¹⁴

Our results indicate that female retirees high in openness or low in conscientiousness are likely to experience greater satisfaction with overall life when compared with other females. Personality, however, does not seem to matter in how males cope with retirement.

14. The first-stage *F*-statistics for the joint significance of the excluded instruments in the regressions of the interaction terms between retirement and each of the Big Five personality traits—Retired × Agreeableness, Retired × Conscientiousness, Retired × Extraversion, Retired × Neuroticism, and Retired × Openness—are 83.48 (140.11), 75.31 (134.60), 58.12 (96.42), 61.53 (82.71), and 84.35 (95.74) for males (females), respectively.

TABLE 5

Fixed Effect Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender,
Splitting Retirees into Normal and Early Retirees

Dependent Variables	Males			Females		
	Overall Life (1)	Income (2)	Leisure (3)	Overall Life (4)	Income (5)	Leisure (6)
Standardized Satisfaction of:						
Independent variables						
Normal retired	0.143 (0.104)	0.0709 (0.101)	0.519*** (0.108)	-0.00512 (0.0961)	-0.148 (0.0903)	0.296*** (0.107)
Early retired	0.227** (0.114)	-0.0558 (0.0937)	0.618*** (0.116)	0.275** (0.133)	-0.0851 (0.119)	0.533*** (0.167)
Disabled	-0.0136 (0.146)	-0.117 (0.154)	0.759*** (0.150)	0.122 (0.178)	-0.0818 (0.131)	0.475** (0.199)
Family care	0.443 (0.743)	1.195** (0.540)	0.685 (1.142)	-0.0991 (0.132)	-0.203 (0.135)	0.205 (0.159)
Unemployed	-0.0583 (0.180)	-0.233 (0.185)	0.422*** (0.163)	-0.00233 (0.220)	-0.300 (0.220)	0.0699 (0.247)
Agreeableness	-0.0188 (0.0747)	0.0986 (0.0668)	0.0105 (0.0716)	0.166** (0.0673)	0.109* (0.0619)	0.0672 (0.0695)
Conscientiousness	0.0588 (0.0658)	-0.0120 (0.0675)	0.0995 (0.0667)	0.0161 (0.0714)	0.0199 (0.0641)	-0.0269 (0.0760)
Extraversion	-0.0488 (0.0737)	-0.0923 (0.0622)	-0.0312 (0.0714)	-0.0537 (0.0642)	0.0142 (0.0643)	0.0151 (0.0699)
Neuroticism	-0.228*** (0.0721)	-0.00242 (0.0712)	-0.184*** (0.0700)	-0.115 (0.0749)	-0.0250 (0.0719)	0.0138 (0.0763)
Openness	0.228*** (0.0785)	0.0991 (0.0797)	0.0434 (0.0785)	-0.0466 (0.0762)	-0.0326 (0.0706)	0.0664 (0.0771)
Early retired × Agreeableness	-0.0467 (0.106)	0.000132 (0.0918)	-0.0525 (0.113)	-0.0573 (0.197)	0.118 (0.131)	0.000272 (0.239)
Early retired × Conscientiousness	-0.0198 (0.119)	-0.115 (0.0955)	-0.242* (0.126)	0.155 (0.196)	-0.136 (0.126)	0.146 (0.216)
Early retired × Extraversion	0.205** (0.0904)	-0.0101 (0.0773)	0.353*** (0.0941)	-0.210* (0.123)	0.0243 (0.117)	-0.218 (0.171)
Early retired × Neuroticism	0.103 (0.102)	-0.158* (0.0944)	-0.0161 (0.105)	0.00121 (0.158)	0.0890 (0.130)	-0.123 (0.172)
Early retired × Openness	-0.259** (0.124)	0.0219 (0.0940)	-0.0283 (0.123)	-0.0116 (0.153)	0.0648 (0.132)	-0.119 (0.230)
Normal retired × Agreeableness	0.0162 (0.0884)	-0.133* (0.0741)	-0.0671 (0.0819)	-0.0474 (0.0698)	0.0500 (0.0679)	-0.0358 (0.0672)
Normal retired × Conscientiousness	-0.00669 (0.0800)	0.0499 (0.0789)	-0.0714 (0.0805)	-0.215*** (0.0661)	-0.127* (0.0657)	-0.163** (0.0690)
Normal retired × Extraversion	0.146* (0.0767)	0.0713 (0.0720)	0.110 (0.0854)	-0.0291 (0.0622)	-0.0154 (0.0606)	-0.0173 (0.0679)
Normal retired × Neuroticism	0.130* (0.0760)	-0.0423 (0.0745)	0.117 (0.0757)	0.0541 (0.0703)	0.00365 (0.0709)	0.0446 (0.0729)
Normal retired × Openness	-0.0900 (0.0844)	-0.107 (0.0804)	-0.0774 (0.0823)	0.204*** (0.0712)	0.0190 (0.0701)	0.134* (0.0734)
Constant	-0.342 (0.415)	-1.072*** (0.372)	-1.884*** (0.505)	1.533*** (0.430)	3.512*** (0.634)	3.538*** (0.578)
Observations	3,599	3,599	3,599	4,238	4,238	4,238

Notes: Robust standard errors are in parentheses. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

VI. ROBUSTNESS CHECKS

In this subsection, we check the robustness of our results to issues related to the retirement and age variables, screening of respondents, attrition, and the IV approach.

As a first check on robustness, we reestimated our model by splitting the dummy

variable on those who reported to be retired into two dummies—normal retirement and early retirement—using the gender-specific eligibility ages for the United Kingdom's basic state pension. As most respondents who were retired did so at the eligibility ages for the United Kingdom's basic state pension, it is not surprising that the coefficient estimates on normal retirement

TABLE 6

Fixed Effect IV (2SLS) Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender, Excluding Early Retirees

Dependent Variables	Males			Females		
	Overall Life	Income	Leisure	Overall Life	Income	Leisure
Standardized Satisfaction of:	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables						
Retired	0.259 (0.226)	0.445** (0.223)	0.958*** (0.233)	0.318 (0.250)	-0.269 (0.247)	0.853*** (0.266)
Disabled	0.0796 (0.214)	0.0530 (0.211)	0.973*** (0.220)	0.305 (0.234)	-0.220 (0.231)	0.801*** (0.249)
Family care	0.525 (0.621)	1.304** (0.614)	0.900 (0.640)	0.228 (0.208)	-0.267 (0.205)	0.592*** (0.221)
Unemployed	-0.0142 (0.202)	-0.172 (0.199)	0.486** (0.208)	0.197 (0.251)	-0.371 (0.247)	0.332 (0.266)
Agreeableness	-0.0174 (0.0728)	0.114 (0.0720)	0.0184 (0.0750)	0.116 (0.0719)	0.131* (0.0709)	0.0509 (0.0764)
Conscientiousness	0.0972 (0.0765)	0.0590 (0.0756)	0.119 (0.0787)	0.0760 (0.0768)	0.0234 (0.0757)	-0.0234 (0.0816)
Extraversion	-0.0745 (0.0737)	-0.107 (0.0729)	-0.0912 (0.0759)	0.0378 (0.0823)	0.0803 (0.0812)	0.0504 (0.0875)
Neuroticism	-0.230*** (0.0751)	0.0536 (0.0743)	-0.166** (0.0774)	-0.157** (0.0798)	-0.0675 (0.0787)	-0.0596 (0.0848)
Openness	0.228*** (0.0770)	0.0634 (0.0762)	0.0641 (0.0793)	-0.0754 (0.0879)	-0.0385 (0.0867)	0.0951 (0.0935)
Retired × Agreeableness	0.0814 (0.115)	-0.160 (0.114)	0.0591 (0.118)	-0.0372 (0.0965)	0.00452 (0.0952)	-0.0861 (0.103)
Retired × Conscientiousness	-0.0811 (0.115)	-0.0211 (0.113)	-0.0925 (0.118)	-0.288*** (0.0975)	-0.136 (0.0961)	-0.144 (0.104)
Retired × Extraversion	0.150 (0.119)	0.0592 (0.118)	0.126 (0.123)	-0.155 (0.100)	-0.0956 (0.0990)	-0.0622 (0.107)
Retired × Neuroticism	0.167 (0.111)	-0.111 (0.110)	0.136 (0.115)	0.113 (0.107)	0.0848 (0.106)	0.149 (0.114)
Retired × Openness	-0.0959 (0.121)	-0.0897 (0.120)	-0.110 (0.124)	0.261** (0.106)	0.0517 (0.105)	0.150 (0.113)
Constant	-1.426 (1.414)	-2.077 (1.399)	-2.377 (1.457)	0.854 (1.170)	2.715** (1.154)	1.949 (1.244)
Observations	3,286	3,286	3,286	4,073	4,073	4,073

Notes: Standard errors are in parentheses. When corrected to robust standard errors the results hold. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

shown in Table 5 mostly follow the same pattern as those for retired individuals in Table 3.

Unlike most European countries, the typical retirement age in the United Kingdom is the age at which individuals can claim the basic state pension. As explained earlier, men over the age of 65 and women over the age of 60 were entitled to basic state pension until 2010, with further adjustments to women's eligibility age taking place after April 2010. Thus, the eligibility ages that we use to construct our instruments do not account for the possibility that individuals might retire early. To address this potential concern, we reestimated our model excluding early retirees. The estimates reported in Table 6 are very similar

to those in Table 4, thus lending support for our earlier empirical strategy.

To this point, we have considered a linear age profile of satisfaction with overall life and domains of life. As the age window that we considered includes only individuals from 50 to 75, this assumption is not unreasonable, as also argued by Coe and Zamarro (2011) and Mazzonna and Peracchi (2014) in the context of health and cognition. Nevertheless, as a robustness check, we redid our analysis with both a squared and a cubed term for age. The estimates presented in Table 7 are largely consistent with the IV results reported earlier. In addition, when we reduce the upper bound of the age window

TABLE 7

Fixed Effect IV (2SLS) Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender, with a Flexible Functional Form of Age

Dependent Variables	Males			Females		
	Overall Life (1)	Income (2)	Leisure (3)	Overall Life (4)	Income (5)	Leisure (6)
Standardized Satisfaction of:						
Independent variables						
Retired	0.197 (0.699)	0.876 (0.707)	1.410* (0.732)	0.102 (0.523)	-0.574 (0.516)	0.804 (0.561)
Disabled	0.0240 (0.437)	0.402 (0.442)	1.261*** (0.458)	0.252 (0.370)	-0.314 (0.365)	0.846** (0.397)
Family care	0.469 (0.635)	1.448** (0.643)	0.897 (0.665)	0.0390 (0.347)	-0.453 (0.343)	0.534 (0.372)
Unemployed	-0.00946 (0.250)	-0.0234 (0.253)	0.581** (0.262)	0.0866 (0.317)	-0.473 (0.313)	0.356 (0.340)
Agreeableness	-0.0286 (0.0796)	0.102 (0.0805)	-0.0307 (0.0833)	0.134* (0.0735)	0.157** (0.0726)	0.0710 (0.0788)
Conscientiousness	0.0758 (0.106)	0.0713 (0.108)	0.119 (0.111)	0.115 (0.0799)	0.0230 (0.0789)	0.00474 (0.0857)
Extraversion	-0.0439 (0.0829)	-0.0940 (0.0839)	-0.00717 (0.0868)	0.00745 (0.0852)	0.0636 (0.0841)	0.0241 (0.0913)
Neuroticism	-0.257*** (0.0826)	0.00202 (0.0836)	-0.199** (0.0865)	-0.176** (0.0839)	-0.0904 (0.0828)	-0.0618 (0.0900)
Openness	0.204** (0.0891)	0.0592 (0.0901)	0.0508 (0.0933)	-0.0974 (0.0924)	-0.00920 (0.0913)	0.0179 (0.0991)
Retired × Agreeableness	0.0238 (0.124)	-0.215* (0.125)	-0.0285 (0.130)	-0.0674 (0.102)	-0.0410 (0.100)	-0.0980 (0.109)
Retired × Conscientiousness	-0.0423 (0.147)	-0.0351 (0.148)	-0.00934 (0.153)	-0.327*** (0.105)	-0.139 (0.103)	-0.167 (0.112)
Retired × Extraversion	0.148 (0.139)	0.0452 (0.141)	0.0430 (0.146)	-0.137 (0.106)	-0.0976 (0.104)	-0.0597 (0.113)
Retired × Neuroticism	0.192 (0.131)	0.00871 (0.132)	0.154 (0.137)	0.140 (0.117)	0.0976 (0.115)	0.165 (0.125)
Retired × Openness	-0.0494 (0.144)	-0.0178 (0.146)	-0.112 (0.151)	0.282** (0.116)	0.0212 (0.114)	0.218* (0.124)
Constant	9.620 (37.03)	-19.97 (37.48)	-12.45 (38.78)	30.11 (28.51)	49.06* (28.15)	14.55 (30.58)
Observations	3,571	3,571	3,571	4,204	4,204	4,204

Notes: Standard errors are in parentheses. When corrected to robust standard errors the results hold. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

to include individuals up to 70, we also find our results to be mostly unchanged.¹⁵

Another check on robustness considers only respondents who were employed in wave 15. Our main concern here is that respondents may have retired for a long period of time before their well-being or personality scores were collected. By restricting our sample to include only respondents who were working in wave 15, any retired individuals at wave 21 were retired no more than 6 years. The estimates presented in Table 8 mostly follow the same pattern with those

reported in Table 4. For overall life satisfaction for women, there is still a negative coefficient on the interaction between retirement and conscientiousness (at p values <.05) and a positive coefficient on the interaction between retirement and openness (at p values <.01). However, although the effect of retirement on leisure satisfaction among average females keeps its sign, it is no longer significant at conventional levels. We also find for the first time a positive interaction coefficient between retirement and neuroticism regarding females' leisure satisfaction (p values <.05).

Attrition is a typical concern in longitudinal household surveys that could cause biased estimates if individuals are leaving the sample in a

15. These estimates are available from the authors on request.

TABLE 8

Fixed Effect IV (2SLS) Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender for Those Respondents Who Were Working in Wave 15

Dependent Variables	Males			Females		
	Overall Life (1)	Income (2)	Leisure (3)	Overall Life (4)	Income (5)	Leisure (6)
Standardized Satisfaction of:						
Independent variables						
Retired	0.422 (0.326)	0.853*** (0.314)	0.798*** (0.306)	0.604 (0.619)	-0.362 (0.583)	1.004 (0.634)
Disabled	0.0809 (0.348)	-0.218 (0.335)	0.790** (0.327)	0.472 (0.481)	-0.0799 (0.452)	0.368 (0.492)
Family care	Omitted because of correlations			-0.132 (0.425)	-0.343 (0.400)	-0.370 (0.435)
Unemployed	-0.0976 (0.304)	0.0880 (0.292)	0.316 (0.285)	-0.112 (0.638)	-1.098* (0.600)	0.281 (0.653)
Agreeableness	-0.00380 (0.0895)	0.191** (0.0861)	0.0263 (0.0841)	0.0979 (0.0999)	0.176* (0.0940)	-0.0167 (0.102)
Conscientiousness	0.0501 (0.0966)	0.00376 (0.0930)	0.0668 (0.0908)	0.194* (0.107)	-0.0114 (0.100)	0.0188 (0.109)
Extraversion	0.0520 (0.0956)	-0.0680 (0.0920)	-0.0723 (0.0898)	-0.0129 (0.115)	0.0350 (0.109)	-0.117 (0.118)
Neuroticism	-0.292*** (0.0898)	0.0919 (0.0865)	-0.137 (0.0844)	-0.187* (0.107)	-0.0267 (0.101)	-0.152 (0.110)
Openness	0.227** (0.0997)	0.0970 (0.0960)	0.0754 (0.0937)	-0.258* (0.132)	-0.111 (0.124)	0.0219 (0.135)
Retired × Agreeableness	-0.124 (0.296)	-0.325 (0.285)	-0.158 (0.279)	0.0830 (0.368)	-0.0559 (0.346)	0.0476 (0.377)
Retired × Conscientiousness	0.0471 (0.288)	0.229 (0.278)	0.271 (0.271)	-0.516** (0.249)	-0.0892 (0.235)	-0.237 (0.255)
Retired × Extraversion	-0.128 (0.262)	-0.0219 (0.252)	0.210 (0.246)	-0.412* (0.248)	-0.0737 (0.234)	-0.0370 (0.254)
Retired × Neuroticism	0.164 (0.232)	-0.240 (0.224)	0.101 (0.218)	0.205 (0.269)	0.0900 (0.253)	0.567** (0.276)
Retired × Openness	0.121 (0.322)	-0.103 (0.310)	-0.198 (0.303)	0.741*** (0.285)	0.201 (0.268)	0.360 (0.292)
Constant	-0.374 (0.404)	-0.250 (0.389)	-0.264 (0.380)	0.866 (1.394)	-0.351 (1.312)	-1.732 (1.427)
Observations	1,783	1,783	1,783	1,514	1,514	1,514

Notes: Standard errors are in parentheses. When corrected to robust standard errors the results hold. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

nonrandom fashion. However, an advantage of using a fixed effects estimator is that it allows attrition to be correlated with a_i , the individual-specific effect. In consequence, if attrition can be explained by such time-invariant characteristics of the individuals, a reasonable assumption in short panels (Wooldridge 2012), the fixed effects estimator will be unbiased. Nevertheless, to check the robustness of our results to the presence of attrition bias, we reestimated our model using a balanced panel of individuals who participated in both waves of the survey, waves 15 and 21. The estimates in Table 9 suggest that our main results reported in Table 4 remain the same, both in terms of significance and magnitude, thus lending further support for our earlier findings.

Finally, we checked the robustness of our results to the use of an alternative approach for IV estimation. To this end, we considered the two-stage residual inclusion (2SRI) method proposed by Terza, Basu, and Rathouz (2008). The first stage consists of regressions of all our endogenous variables on the exogenous variables and the excluded instruments, controlling for individual fixed effects like we did for our previous IV method. Second-stage regressions are also linear fixed effects models of satisfaction with overall life and domains of life on all our independent variables, including the residuals from all first-stage regressions. Note that the endogenous variables are not replaced in the second-stage regressions (Terza, Basu,

TABLE 9

Fixed Effect IV (2SLS) Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender, with a Balanced Panel

Dependent Variables	Males			Females		
	Overall Life	Income	Leisure	Overall Life	Income	Leisure
Standardized Satisfaction of:	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables						
Retired	0.213 (0.395)	0.784* (0.402)	0.819** (0.406)	0.200 (0.332)	-0.310 (0.324)	0.833** (0.351)
Disabled	0.0315 (0.292)	0.344 (0.297)	0.959*** (0.300)	0.282 (0.280)	-0.192 (0.273)	0.864*** (0.296)
Family care	0.473 (0.631)	1.498** (0.642)	0.699 (0.648)	0.0729 (0.253)	-0.326 (0.247)	0.551** (0.268)
Unemployed	-0.00600 (0.216)	-0.0556 (0.220)	0.475** (0.222)	0.130 (0.270)	-0.365 (0.264)	0.368 (0.286)
Agreeableness	-0.0286 (0.0749)	0.106 (0.0762)	0.00187 (0.0769)	0.127* (0.0719)	0.147** (0.0702)	0.0684 (0.0761)
Conscientiousness	0.0758 (0.0878)	0.0619 (0.0893)	0.0571 (0.0901)	0.103 (0.0777)	0.0157 (0.0758)	0.00498 (0.0822)
Extraversion	-0.0418 (0.0830)	-0.107 (0.0844)	0.0146 (0.0852)	-0.00109 (0.0861)	0.0582 (0.0840)	0.0246 (0.0911)
Neuroticism	-0.258*** (0.0817)	0.00454 (0.0831)	-0.218*** (0.0839)	-0.164** (0.0830)	-0.0785 (0.0811)	-0.0607 (0.0879)
Openness	0.202** (0.0836)	0.0667 (0.0850)	0.0734 (0.0858)	-0.100 (0.0896)	-0.0203 (0.0875)	0.0165 (0.0949)
Retired × Agreeableness	0.0232 (0.124)	-0.217* (0.126)	-0.0429 (0.127)	-0.0501 (0.0992)	-0.0236 (0.0969)	-0.0946 (0.105)
Retired × Conscientiousness	-0.0447 (0.131)	-0.0171 (0.133)	0.0291 (0.135)	-0.309*** (0.103)	-0.124 (0.100)	-0.163 (0.109)
Retired × Extraversion	0.144 (0.136)	0.0739 (0.138)	0.0244 (0.139)	-0.125 (0.106)	-0.0860 (0.104)	-0.0604 (0.113)
Retired × Neuroticism	0.196 (0.130)	-0.00305 (0.132)	0.168 (0.133)	0.121 (0.114)	0.0825 (0.111)	0.163 (0.121)
Retired × Openness	-0.0474 (0.135)	-0.0307 (0.137)	-0.143 (0.139)	0.277** (0.111)	0.0305 (0.108)	0.213* (0.117)
Constant	-0.492 (1.207)	-1.095 (1.227)	-1.987 (1.239)	1.442 (1.517)	3.805** (1.481)	2.763* (1.605)
Observations	2,047	2,047	2,047	2,377	2,377	2,377

Notes: Standard errors are in parentheses. When corrected to robust standard errors the results hold. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

and Rathouz 2008). The underlying idea is to use the estimated residuals from the first-stage regressions as control functions for the endogeneity of retirement and retirement–personality interactions. The estimates in Table 10 are qualitatively and quantitatively similar to our previous findings.

VII. CONCLUSION

Previous empirical analysis has shown significant impacts on satisfaction with different life domains for those who stop working, including retirees. Drawing on data from the BHPS and UnSoc, this study provides some of the first

longitudinal evidence on the impact of personality characteristics on the well-being effects of retirement. Using the eligibility ages for the United Kingdom's basic state pension to construct an instrument for retirement, we find that retirement increases leisure satisfaction for both males and females but not necessarily overall life satisfaction and income satisfaction. We also find evidence of heterogeneity in terms of gender and personality. More specifically, the life satisfaction of female retirees who score high in openness or low in conscientiousness is greater when compared with other females. For males, however, personality does not seem to matter in how they cope with retirement.

TABLE 10

Fixed Effect IV (2SRI) Estimates of Retirement and Personality on Life and Domain Satisfaction by Gender

Dependent Variables	Males			Females		
	Overall Life (1)	Income (2)	Leisure (3)	Overall Life (4)	Income (5)	Leisure (6)
Standardized Satisfaction of:						
Independent variables						
Retired	0.197 (0.285)	0.605** (0.273)	0.758*** (0.286)	0.138 (0.243)	-0.264 (0.232)	0.677*** (0.261)
Disabled	0.00298 (0.147)	-0.0799 (0.157)	0.811*** (0.149)	0.127 (0.178)	-0.112 (0.133)	0.507** (0.203)
Family care	0.507 (0.730)	1.223** (0.549)	0.695 (1.189)	-0.0558 (0.134)	-0.228* (0.138)	0.218 (0.165)
Unemployed	-0.00739 (0.181)	-0.225 (0.189)	0.445*** (0.167)	0.0486 (0.219)	-0.307 (0.220)	0.109 (0.238)
Agreeableness	-0.0269 (0.0812)	0.117 (0.0731)	0.00682 (0.0754)	0.132* (0.0787)	0.150** (0.0675)	0.0744 (0.0844)
Conscientiousness	0.0755 (0.0801)	0.0411 (0.0827)	0.0518 (0.0842)	0.0980 (0.0910)	0.0197 (0.0746)	-0.0109 (0.0963)
Extraversion	-0.0427 (0.0893)	-0.110 (0.0768)	0.0115 (0.0901)	-0.00208 (0.0852)	0.0590 (0.0822)	0.0207 (0.0906)
Neuroticism	-0.258*** (0.0894)	0.00446 (0.0861)	-0.217** (0.0858)	-0.161* (0.0961)	-0.0804 (0.0859)	-0.0540 (0.0938)
Openness	0.204** (0.0971)	0.0682 (0.0991)	0.0748 (0.0951)	-0.100 (0.103)	-0.0217 (0.0922)	0.0210 (0.0989)
Retired × Agreeableness	0.0215 (0.136)	-0.228** (0.115)	-0.0481 (0.129)	-0.0570 (0.113)	-0.0206 (0.0986)	-0.111 (0.113)
Retired × Conscientiousness	-0.0439 (0.125)	0.000338 (0.122)	0.0348 (0.137)	-0.306*** (0.112)	-0.130 (0.102)	-0.147 (0.119)
Retired × Extraversion	0.144 (0.127)	0.0834 (0.118)	0.0291 (0.145)	-0.120 (0.108)	-0.0872 (0.104)	-0.0530 (0.109)
Retired × Neuroticism	0.194 (0.134)	-0.0193 (0.127)	0.162 (0.131)	0.114 (0.122)	0.0873 (0.113)	0.148 (0.123)
Retired × Openness	-0.0477 (0.136)	-0.0257 (0.139)	-0.142 (0.144)	0.279** (0.128)	0.0329 (0.116)	0.212* (0.124)
Residuals of retired	-0.0155 (0.287)	-0.610** (0.266)	-0.184 (0.285)	-0.120 (0.245)	0.134 (0.237)	-0.395 (0.268)
Residuals of retired × Agreeableness	-0.0483 (0.143)	0.175 (0.130)	-0.0129 (0.140)	0.0374 (0.149)	0.117 (0.125)	0.124 (0.158)
Residuals of retired × Conscientiousness	0.00437 (0.144)	-0.0543 (0.138)	-0.270 (0.173)	0.186 (0.150)	0.0137 (0.127)	0.0216 (0.164)
Residuals of retired × Extraversion	0.0592 (0.137)	-0.0625 (0.128)	0.170 (0.156)	0.0815 (0.132)	0.114 (0.126)	0.0183 (0.140)
Residuals of retired × Neuroticism	-0.0807 (0.151)	-0.0795 (0.143)	-0.130 (0.149)	-0.0813 (0.143)	-0.0929 (0.130)	-0.164 (0.154)
Residuals of retired × Openness	-0.109 (0.148)	-0.000478 (0.147)	0.155 (0.171)	-0.130 (0.161)	-0.0562 (0.133)	-0.139 (0.156)
Constant	-1.012** (0.420)	-1.733*** (0.378)	-2.217*** (0.468)	1.534*** (0.521)	3.721*** (0.680)	3.052*** (0.704)
Observations	3,571	3,571	3,571	4,204	4,204	4,204

Notes: Bootstrapped standard errors are in parentheses. The dependent variables are the standardized satisfaction with overall life and domains of life with mean 0 and standard deviation 1. Standardized age, standardized real household income, dummies indicating marital status, educational attainment, health problems, interactions of the dummy on health problems with standardized personality traits, interactions of educational attainment with standardized personality traits, demographic areas, and time were additionally controlled for in each of the regressions.

***Significant at <1%; **significant at <5%; *significant at <10%.

Complementing previous work in economics and psychology, these findings may be useful for informing policy choices for older individuals and in their own planning. For instance, counseling programs for retirement should consider how to tailor the message and support to different

personality types and gender. In highlighting these differences among older individuals, we aim to encourage new research that could further our understanding of individual heterogeneity in retirement. Replicating the aforementioned findings for different countries to explore the

potential role of cultural differences could be another valuable source of information for use in retirement preparation courses.

APPENDIX: PERSONALITY VARIABLES

In the BHPS waves 15 and 21, respondents were asked to rate how they see themselves against a 15-item personality inventory. Answers are coded on a scale of 1 to 7, where 1 indicates "does not apply to me at all" and 7 indicates "applies to me perfectly." The questions are as follows:

"I see myself as someone who ..."

- a. *Is sometimes rude to others (Agreeableness)*
- b. *Does a thorough job (Conscientiousness)*
- c. *Is talkative (Extraversion)*
- d. *Worries a lot (Neuroticism)*
- e. *Is original, comes up with new ideas (Openness)*
- f. *Has a forgiving nature (Agreeableness)*
- g. *Tends to be lazy (Conscientiousness)*
- h. *Is outgoing, sociable (Extraversion)*
- i. *Gets nervous easily (Neuroticism)*
- j. *Values artistic, aesthetic experiences (Openness)*
- k. *Is considerate and kind to almost everyone (Agreeableness)*
- l. *Does things efficiently (Conscientiousness)*
- m. *Is reserved (Extraversion)*
- n. *Is relaxed, handles stress well (Neuroticism)*
- o. *Has an active imagination (Openness)*

We compute a total score for each personality trait (the reversed scores are used for questions a, g, m, and n). The possible value range for each personality trait's total score is from 3 to 21. Then, the standardized scores are calculated for each subgroup (males and females).

REFERENCES

- Binder, M., and A. Coad. "From Average Joe's Happiness to Miserable Jane and Cheerful John: Using Quantile Regressions to Analyze the Full Subjective Well-Being Distribution." *Journal of Economic Behavior and Organization*, 79, 2011, 275–90.
- Blanchflower, D. G., and A. J. Oswald. "Well-Being Over Time in Britain and the USA." *Journal of Public Economics*, 88(7), 2004, 1359–86.
- Bonsang, E., and T. J. Klein. "Retirement and Subjective Well-Being." *Journal of Economic Behavior and Organization*, 83(3), 2012, 311–29.
- Bonsang, E., S. Adam, and S. Perelman. "Does Retirement Affect Cognitive Functioning?" *Journal of Health Economics*, 31(3), 2012, 490–501.
- Bowles, S., H. Gintis, and M. Osborne. "Incentive-Enhancing Preferences: Personality, Behavior, and Earnings." *American Economic Review*, 91, 2001, 155–58.
- Boyce, C. J. "Understanding Fixed Effects in Human Well-Being." *Journal of Economic Psychology*, 31, 2010, 1–16.
- Boyce, C. J., and A. M. Wood. "Personality Prior to Disability Determines Adaptation: Agreeable Individuals Recover Lost Life Satisfaction Faster and More Completely." *Psychological Science*, 22, 2011a, 1397–402.
- . "Personality and the Marginal Utility of Income: Personality Interacts with Increases in Household Income to Determine Life Satisfaction." *Journal of Economic Behavior and Organization*, 78, 2011b, 183–91.
- Boyce, C. J., A. M. Wood, and G. D. A. Brown. "The Dark Side of Conscientiousness: Conscientious People Experience Greater Drops in Life Satisfaction Following Unemployment." *Journal of Research in Personality*, 44, 2010, 535–39.
- Boyce, C. J., A. M. Wood, and N. Powdthavee. "Is Personality Fixed? Personality Changes as Much as Variable Economic Factors and More Strongly Predicts Changes to Life Satisfaction." *Social Indicators Research*, 111, 2013, 287–305.
- Budria, S. "Are Relative-Income Effects Constant across the Well-Being Distribution?" *Journal of Happiness Studies*, 14, 2013, 1379–408.
- Budria, S., and A. Ferrer-i-Carbonell. "Income Comparisons and Non-cognitive Skills." SOEP papers on Multidisciplinary Panel Data Research 441, DIW Berlin, The German Socio-Economic Panel (GSOEP), 2012.
- Charles, K. "Is Retirement Depressing? Labor Force Inactivity and Psychological Well-Being in Later Life." *Research in Labor Economics*, 23, 2004, 269–99.
- Clark, A., F. Etilé, F. Y. B. Postel-Vinay, C. Senik, and K. Van Der Straeten. "Heterogeneity in Reported Well-Being: Evidence from Twelve European Countries." *Economic Journal*, 115, 2005, 118–32.
- Coe, N. B., and G. Zamorro. "Retirement Effects on Health in Europe." *Journal of Health Economics*, 30(1), 2011, 77–86.
- Coe, N. B., H. M. von Gaudecker, M. Lindeboom, and J. Maurer. "The Effect of Retirement on Cognitive Functioning." *Health Economics*, 21(8), 2012, 913–27.
- Colquitt, J. A., and J. Simmering. "Conscientiousness, Goal Orientation, and Motivation to Learn during the Learning Process: A Longitudinal Study." *Journal of Applied Psychology*, 83, 1998, 654–65.
- DeNeve, K. M., and H. Cooper. "The Happy Personality: A Meta-Analysis of 137 Personality Traits and Subjective Well-Being." *Psychological Bulletin*, 124, 1998, 197–229.
- Ferrer-i-Carbonell, A., and P. Frijters. "How Important Is Methodology for the Estimates of the Determinants of Happiness?" *Economic Journal*, 114, 2004, 641–59.
- Frijters, P., J. P. Haisken-DeNew, and M. A. Shields. "Money Does Matter! Evidence from Increasing Real Income and Life Satisfaction in East Germany Following Reunification." *American Economic Review*, 94, 2004, 730–40.
- Gerlitz, J. Y., and J. Schupp. "Zur erhebung der Big-Five-basierten persönlichkeitsmerkmale im SOEP." DIW Research Notes No. 4 [Collecting the Big-Five Personality Traits in SOEP], 2005.
- Goldberg, L. R. "The Structure of Phenotypic Personality-Traits." *American Psychologist*, 48, 1993, 26–34.
- Gosling, S. D., P. J. Rentfrow, and W. B. Swann Jr. "A Very Brief Measure of the Big Five Personality Domains." *Journal of Research in Personality*, 37, 2003, 504–28.
- Gunther, K., L. Cohen, and S. Armeli. "The Role of Neuroticism in Daily Stress and Coping." *Journal of Personality and Social Psychology*, 77, 1999, 1087–100.
- Headley, B. "Life Goals Matter to Happiness: A Revision of Set-Point Theory." *Social Indicators Research*, 86, 2008, 213–31.
- Horner, E. M. "Subjective Well-Being and Retirement: Analysis and Policy Recommendations." *Journal of Happiness Studies*, 15(1), 2014, 125–44.
- John, O. P., and S. Srivastava. "The Big Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives," in *Handbook of Personality: Theory and Research*. 2nd

- ed., edited by L. A. Pervin and O. P. John. New York: Guilford Press, 1999, 102–38.
- John, O. P., E. M. Donahue, and R. L. Kentle. *The Big Five Inventory—Versions 4a and 54*. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research, 1991.
- Johnston, D. W., and W. S. Lee. “Retiring to the Good Life? The Short-Term Effects of Retirement on Health.” *Economics Letters*, 103(1), 2009, 8–11.
- Jürges, H. “Age, Cohort, and the Slump in Job Satisfaction among West German Workers.” *Labour*, 17(4), 2003, 489–518.
- Kapteyn, A., J. Lee, and G. Zammaro. “Does Retirement Induced through Social Security Pension Eligibility Influence Subjective Well-Being? A Cross-Country Comparison.” Working Paper No. WP 2013–301, University of Michigan Retirement Research Center (MRRC), Ann Arbor, MI, 2013.
- Kesavayuth, D., R. E. Rosenman, and V. Zikos. “Personality and Health Satisfaction.” *Journal of Behavioral and Experimental Economics*, 54, 2015, 64–73.
- Latif, E. “The Impact of Retirement on Psychological Well-Being in Canada.” *Journal of Socio-Economics*, 40(4), 2011, 373–80.
- Lykken, D., and A. Tellegen. “Happiness Is a Stochastic Phenomenon.” *Psychological Science*, 7, 1996, 186–89.
- Mazzonna, F., and F. Peracchi. “Unhealthy Retirement?” Working Paper No. 1409. Einaudi Institute for Economics and Finance (EIEF), 2014.
- McCrae, R. R., and P. T. Costa. “Validation of the 5-Factor Model of Personality Across Instruments and Observers.” *Journal of Personality and Social Psychology*, 52, 1987, 81–90.
- Myers, D. G., and E. Diener. “Who Is Happy?” *Psychological Science*, 6, 1995, 10–19.
- Organisation for Economic Cooperation and Development (OECD). *Pensions at a Glance 2011: Retirement-Income Systems in OECD and G20 Countries*. Paris: OECD Publishing, 2011. Accessed November 1, 2015. http://dx.doi.org/10.1787/pension_glance-2011-en.
- Rammstedt, B. “Who Worries and Who Is Happy? Explaining Individual Differences in Worries and Satisfaction by Personality.” *Personality and Individual Differences*, 42, 2007, 1626–34.
- Reis, M., and D. P. Gold. “Retirement, Personality, and Life Satisfaction: A Review and Two Models.” *Journal of Applied Gerontology*, 12(2), 1993, 261–82.
- Robinson, O. C., J. D. Demetre, and R. Corney. “Personality and Retirement: Exploring the Links between the Big Five Personality Traits, Reasons for Retirement and the Experience of Being Retired.” *Personality and Individual Differences*, 48(7), 2010, 792–97.
- Soto, C. J., and M. Luhmann. “Who Can Buy Happiness? Personality Traits Moderate the Effects of Stable Income Differences and Income Fluctuations on Life Satisfaction.” *Social Psychological and Personality Science*, 4, 2013, 46–53.
- Staiger, D. O., and J. H. Stock. “Instrumental Variables Regression with Weak Instruments.” *Econometrica*, 65(3), 1997, 557–86.
- Steel, P., J. Schmidt, and J. Shultz. “Refining the Relationship between Personality and Subjective Well-Being.” *Psychological Bulletin*, 134, 2008, 138–61.
- Tavares, L. P. “Who Delays Childbearing? The Relationships between Fertility, Education and Personality Traits.” ISER Working Paper Series No. 2010-17, 2010.
- Terza, J. V., A. Basu, and P. J. Rathouz. “Two-Stage Residual Inclusion Estimation: Addressing Endogeneity in Health Econometric Modeling.” *Journal of Health Economics*, 27(3), 2008, 531–43.
- University of Essex. Institute for Social and Economic Research. “British Household Panel Survey: Waves 1–18, 1991–2009 [Data Collection].” 7th ed. UK Data Service, SN: 5151, 2010. Accessed July 2010. <http://dx.doi.org/10.5255/UKDA-SN-5151-1>.
- University of Essex. Institute for Social and Economic Research, NatCen Social Research. “Understanding Society: Waves 1–4, 2009–2013 [Data Collection].” 6th ed. UK Data Service, SN: 6614, 2014. Accessed November 2014. <http://dx.doi.org/10.5255/UKDA-SN-6614-7>.
- Wooldridge, J. M. *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, MA: MIT Press, 2012.
- Yap, S. C., I. Anusic, and R. E. Lucas. “Does Personality Moderate Reaction and Adaptation to Major Life Events? Evidence from the British Household Panel Survey.” *Journal of Research in Personality*, 46, 2012, 477–88.