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Personality and Response to the Financial Crisis

Angela Lee Duckworth and David Weir

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Angela Lee Duckworth
University of Pennsylvania

David R. Weir
University of Michigan

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Michigan Retirement Research Center
University of Michigan
P.O. Box 1248
Ann Arbor, MI 48104
http://www.mrrc.isr.umich.edu/
(734) 615-0422

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Abstract

In a previous study, we found the family of personality traits known as *conscientiousness* to be associated in cross-sectional analyses with both lifetime earnings and wealth. In this study, we used data from an Internet survey of HRS respondents in the second quarter of 2009 to test whether conscientiousness and other Big Five factors *prospectively* predicted responses to the financial crisis of 2008/09. In addition, to improve the targeting and design of behavioral interventions for "at-risk" individuals, we examined two specific facets of conscientiousness (i.e., self-control and perseverance) that may be more highly related to these economic outcomes than other facets. Finally, we used data from the Consumption and Activities Mail Survey (CAMS) to examine whether personality is related to the proportion of income saved vs. spent.

Missing data precluded sufficiently powerful prospective analyses of personality and responses to the financial crisis. Likewise, data on self-control and perseverance from the 2010 experimental module were not sufficient at the time of final reporting to come to definitive conclusions about how these facets relate to economic outcomes. We did find that conscientious adults save more and spend less of their incomes, whereas adults who are higher in openness to experience (e.g., adventurous, sophisticated) save less and spend more of their income. The robust associations between conscientiousness and economic outcomes suggests further investigation of interventions that improve conscientiousness as well as policies that specifically target less conscientious individuals (e.g., default choices for retirement savings).

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Introduction

Personality traits, defined as patterns of thinking, feeling, and behaving which are relatively stable across time and situations, have recently been recognized as important predictors of economic outcomes (Borghans, Duckworth, Heckman, & ter Weel, 2008; Paunonen, 2003). The Big Five taxonomy of personality traits is now widely accepted as the organizational structure of personality traits and distinguishes among traits in the conscientiousness, extraversion, agreeableness, emotional stability, and openness to experience families. This taxonomy has been replicated across cultures (John & Srivastava, 1999) and developmental stages of the life course (Soto, John, Gosling, & Potter, 2008).

The personality psychology literature has identified conscientiousness as the Big Five factor most robustly related to academic achievement (Poropat, 2009), job performance (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), marital stability (Roberts et al., 2007), physical health (Hampson & Friedman, in press; Hampson, Goldberg, Vogt, & Dubanoski, 2006), and longevity (Martin, Friedman, & Schwartz, 2007).

Consistent with these findings, in our previous MRRC project we found Big Five conscientiousness to be more strongly associated with both lifetime earnings and wealth conditional upon earnings, than any other Big Five factor. These associations remained significant even when controlling for years of education, demographics, and measures of cognitive ability. We have since confirmed these findings using structural equation modeling (SEM) to correct estimates for measurement error.

A notable limitation of our prior analyses was the timing of personality assessment (i.e., near or after the end of working life in the HRS). Although personality traits are highly stable in

adulthood (7-year test-retest stability about *r* = .7 by the fifth decade of life;Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), stronger causal inferences would have been possible in a prospective study in which personality traits were measured *prior* to the outcomes of earnings and retirement savings/investment. One potential pathway for conscientiousness to determine wealth accumulation is adherence to established budgets and saving plans in the face of immediate temptation. The recent financial crisis presented a unique challenge to long-term goals: People who liquidated assets in the trough stood to lose significant shares of wealth. In the current project, we attempted to use data from an Internet survey of HRS respondents in the second quarter of 2009 to test how conscientiousness and other Big Five factors *prospectively* predicted responses to the financial crisis of 2008/09.

A second limitation of our prior analyses was the content of personality assessment in the HRS. The Big Five factors are broad families of personality traits, with component facets of varying relevance to particular outcomes. In the leave-behind psychosocial surveys in 2006 and 2008, only five adjectives (i.e., organized, responsible, hardworking, careless, and thorough) were used to capture Big Five conscientiousness. The facets of *perseverance* and *self-control* were not explicitly included. One motivation for investigating with higher-resolution measures these more narrowly specified facets is that they may demonstrate incremental predictive validity for relevant outcomes (Paunonen & Ashton, 2001). More importantly, understanding which specific traits in the family of Big Five conscientiousness determine economic outcomes, and which do not, can improve the targeting and design of behavioral interventions for “at-risk” individuals.

We designed an experimental module for the 2010 wave of HRS which includes four items assessing perseverance (sometimes referred to as “grit”) and three items assessing self-control. In addition, items were included to assess domain-specific aspects of impulsivity (the obverse of self-control) of theoretical relevance to health and economic outcomes. Specifically, a total of 16 items assess impulsivity in the domains of exercise, food, finances, and interpersonal relations.

Finally, our prior analyses did not relate personality to consumption behavior. Conscientious adults are wealthier, even when controlling for lifetime earnings. However, research has not confirmed whether conscientious individuals save more and spend less of their income. We therefore merged personality data with data from the Consumption and Activities Mail Survey (CAMS), which was mailed to 5,000 HRS households selected at random from those that participated in HRS 2000. Follow-up questionnaires to the same households were mailed in odd years and refer to consumption and activities the year prior. We computed average self-reported wealth, income, and consumption from all available data.

Hypotheses

When controlling for the possible confounds of educational attainment, cognitive ability, and demographic factors --

1. Big Five conscientiousness measured in 2006 and 2008 predicts adaptive decision-making (i.e., decisions which preserved wealth) during the 2008/09 financial crisis.
2. Big Five conscientiousness is (inversely) associated with proportion of income spent rather than saved.

3. Perseverance and self-control measured in 2010 demonstrate convergent validity (i.e., positive correlations of at least moderate magnitude) with the Big Five factor of conscientiousness (measured in 2006 and 2008).
4. Perseverance and self-control each demonstrate incremental (inverse) associations, over and beyond Big Five conscientiousness, with proportion of income spent rather than saved.
5. Impulsive behavior in the domain of finances, but not in the domains of exercise, food, and interpersonal relations, is associated with proportion of income spent rather than saved.

Data and Methods

Our sample derives from the 2006 and 2008 waves of HRS. To be included, a respondent had to complete the self-administered questionnaire with personality measures in either 2006 or 2008 and be included in the linked Social Security administrative records.

Big Five personality factors were measured using a 26-item questionnaire developed for the Midlife Development Inventory (Lachman & Bertrand, 2001). HRS participants used a 4-point rating scale to endorse 26 adjectives corresponding to Big Five personality traits of conscientiousness, emotional stability, agreeableness, extraversion, and openness to experience. A total of 14,500 respondents completed the questionnaires.

In September 2001, CAMS wave 1 was mailed to 5,000 households selected at random from households that participated in HRS 2000. In couples households, the survey was sent to one of the two spouses at random. In September 2003 and October 2005, 2007, and 2009, CAMS waves 2-5 were sent to the same households. CAMS asked respondents about their spending in each of 32 categories, spanning nearly all dimensions of spending. The rates of item nonresponse were small, and some values could be imputed to zero with considerable

confidence due to the information in the linked HRS data. The resulting spending levels are close to totals from the Consumer Expenditure Survey (CEX) for the age groups 55-74.

Facet-level measures of perseverance and self-control derive from a 2010 experimental module. For each scale, a subset of items was selected from previously validated questionnaires for perseverance (Duckworth, Peterson, Matthews, & Kelly, 2007) and self-control (Tangney, Baumeister, & Boone, 2004). Similarly, items assessing four types of domain-specific impulsivity behavior were selected from a previously validated questionnaire (Tsukayama, Duckworth & Kim, 2011). As of this report, data are available for *N* = 1,587 cases, though the majority of these were new participants for whom CAMS and prior Big Five personality data were not available.

In all regression analyses we controlled for birth year, sex, ethnicity, HRS entry cohort, years of education, and a composite measure of cognitive ability encompassing four cognitive measures that were standardized and averaged: episodic memory (sum of immediate and delayed word recall), mental status (backward counting task), numeracy, and vocabulary. We took the first observation in the panel on each of these cognitive measures to minimize the impact of age-related decline.

Results

Hypothesis 1. Unfortunately, there was insufficient data to test hypothesis 1. For analyses where data were available from most Internet respondents, the sample size was about *N* = 750. However, the sample size was much smaller for the majority of analyses relating responses in the Internet survey to personality variables. The sample size was particularly small for certain Internet survey questions (e.g., the retirement questions were inapplicable to many

respondents). Exploratory bivariate analyses revealed very few associations which were both statistically significant (at $p < .05$) and theoretically interpretable, and none of these associations survived a Bonferroni correction for multiple comparisons.

Hypothesis 2. In support of hypothesis 2, the ratio of (log) average consumption to (log) average income was inversely associated with Big Five conscientiousness (β = -.06) and positively associated with Big Five openness to experience (β = .08) when controlling for race, gender, birthdate, HRS cohort, years of education, (log) wealth, and cognitive ability. As shown in Table 1, the available sample for this analysis was *N* = 2,327. In other words, more conscientious (e.g., hardworking, dependable) adults tend to spend less of their income, whereas individuals who are rather "sophisticated" and "adventurous" tend to spend more of their income.

Hypothesis 3. In support of hypothesis 3, conscientiousness was correlated with both perseverance (*r* = .31) and self-control (*r* = .30) among *N* = 272 participants with data for both the experimental module questions and personality. See Table 2. However, while the 5-item grit scale displayed adequate internal reliability (coefficient alpha = .67), the 3-item self-control scale displayed poor internal reliability (coefficient alpha = .37), suggesting that associations with self-control were attenuated due to unacceptably high measurement error (63% of the variance based on the coefficient alpha of .37) in the self-control measure.

Hypothesis 4. There was insufficient data to support hypothesis 4. As shown in Tables 3 and 4, perseverance was inversely associated with the ratio of (log) average consumption to (log) average income (β = -.14) as well as log income (β = .17), but only the latter association reached significance (β = .12) when controlling for Big Five personality among *N* = 182 participants with

data available for these analyses. Given the small effect size of this relationship, we would have liked a larger sample size for this analysis and plan to re-run this analysis when additional data from the experimental module are received. In separate analyses (not shown), self-control was not significantly associated with income, wealth, or the ratio of consumption to income, though we cannot make strong inferences from these negative findings given the small sample size and unacceptably high measurement error in the self-control measure.

Hypothesis 5. In support of hypothesis 5, impulsivity in the domain of finances was associated with the ratio of (log) average consumption to (log) average income (β = .15) when controlling for race, gender, birthdate, HRS cohort, years of education, (log) wealth, cognitive ability, and conscientiousness in the *N* = 182 participants with data available for this analysis. See Table 5. Notably, conscientiousness was no longer a significant predictor of the ratio of (log) average consumption to (log) average income when including impulsivity in finance in this model, suggesting impulsive financial behavior as a mediator of the effect of conscientiousness on consumption. As shown in Table 6, all domain-specific impulsivity measures demonstrated convergent validity with domain-general self-control (*r*'s from -.24 to -.50 in a sample of *N* = 1574 participants) and with conscientiousness (*r*'s from -.17 to -.24 in a sample of *N* = 273 participants).

Discussion

Overall, our findings support the hypothesis that personality influences financial outcomes among older adults. Conscientious individuals, who earn more money and end up wealthier than other individuals, save more (and spend less) of their income. Furthermore, the effect of conscientiousness on consumption can be at least partly explained by self-controlled

behavior in the domain of finances. That is, more conscientious individuals less frequently report, “buy(ing) things on impulse,” “spend(ing) too much money,” “buy(ing) things I hadn’t planned to buy,” and “buy(ing) things I don’t really need.” These behavioral tendencies in turn predict the proportion of earnings spent vs. saved.

Future research is needed to test whether conscientious adults invest more wisely in addition to saving more. Our attempt to pursue this question using data from a very small subsample of HRS participants who responded to an Internet survey following the financial crisis was unsuccessful because of insufficient statistical power. Likewise, we believe that additional research using larger samples and prospective study designs is needed to illuminate the relative importance of distinct facets of Big Five conscientiousness to economic outcomes.

In general, deeper insight into specific aspects of personality that determine economic behavior should sharpen policy and intervention efforts aimed at improving the financial security and well-being of older adults.

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Table 1. Regression model predicting consumption as a proportion of income from Big Five personality, cognitive ability, and demographic covariates

	Unstandardized Coefficients		Standardized Coefficients	
Variable	*B*	Standard Error	*B*	*t*
Birthdate	-.001	.000	-.188****	-5.249
Gender	.013	.002	.124****	6.075
Hispanic	.011	.004	.051**	2.562
Black	.014	.003	.085****	4.220
Years of Education	-.003	.000	-.139****	-5.727
Cohort 2	.001	.005	.006	.260
Cohort 3	.002	.005	.017	.410
Cohort 4	-.004	.006	-.027	-.679
Cohort 5	-.001	.007	-.007	-.163
Log average wealth	-.015	.001	-.217****	-10.173
Agreeableness	.001	.003	.013	.555
Extroversion	-.001	.002	-.015	-.603
Neuroticism	.003	.002	.030	1.517
Conscientiousness	**-.007**	**.002**	**-.062****	**-2.767**
Openness	**.008**	**.002**	**.080*****	**3.263**
Cognitive ability	-.003	.002	-.038	-1.640

Note. F (16, 2310) = 38.43, p < .001. *p < .05, **p < .01, ***p < .001, ****p < .0001.

Table 2. Bivariate correlations among perseverance (grit), self-control, Big Five personality, and cognitive ability

	Grit	Self-Control	Agreeableness	Extroversion	Neuroticism	Conscientiousness	Openness	Cognitive ability
Grit								
Pearson's r	1	.372****	.055	.156**	-.323****	**.311****	.110	.069
N	1577	1575	273	273	271	**273**	273	258
Self-Control								
Pearson's r		1	.103	.103	-.316****	**.299****	.159**	.158*
N		1575	272	272	270	**272**	272	257
Agreeableness								
Pearson's r			1	.566****	-.113****	.435****	.417****	.028
N			3768	3766	3745	3761	3756	3088
Extroversion								
Pearson's r				1	-.217****	.382****	.540****	.015
N				3769	3745	3760	3756	3088
Neuroticism								
Pearson's r					1	-.253****	-.187****	-.117****
N					3745	3741	3738	3068
Conscientiousness								
Pearson's r						1	.453****	.175****
N						3761	3752	3082
Openness								
Pearson's r							1	.191****
N							3757	3080
Cognitive ability								
Pearson's r								1
N								3427

Note. *$p < .05$, **$p < .01$, ***$p < .001$, ****$p < .0001$.

Table 3. Regression model predicting log income from grit, Big Five personality, cognitive ability, and demographic covariates

	Unstandardized Coefficients		Standardized Coefficients	
Variable	*B*	Standard Error	*B*	*t*
Gender	-.098	.041	-.128*	-2.379
Birthdate	.004	.004	.099	.976
Hispanic	-.023	.070	-.017	-.324
Black	-.058	.056	-.057	-1.048
Years of Education	.030	.008	.246****	3.740
Cohort 2	.071	.082	.066	.866
Cohort 3	.095	.090	.134	1.054
Cohort 4	.147	.122	.141	1.205
Cohort 5	.198	.137	.179	1.440
Log average wealth	.242	.028	.508****	8.688
Cognitive ability	.018	.033	.035	.545
Grit	**.051**	**.024**	**.118***	**2.069**
Agreeableness	.077	.059	.088	1.308
Extroversion	-.035	.048	-.052	-.726
Neuroticism	-.020	.031	-.037	-.653
Conscientiousness	.065	.049	.083	1.325
Openness	-.034	.039	-.055	-.877

Note. F (17, 164) = 15.44, p < .001. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$, $^{****}p < .0001$.

Table 4. Regression model predicting consumption as a proportion of income from grit, Big Five personality, cognitive ability, and demographic covariates

	Unstandardized Coefficients		Standardized Coefficients	
Variable	*B*	Standard Error	*B*	*t*
Gender	.010	.009	.076	1.099
Birthdate (yr)	-.001	.001	-.204	-1.565
Hispanic	-.006	.015	-.025	-.373
Black	.038	.012	.223**	3.210
Years of Education	-.002	.002	-.081	-.964
Cohort 2	-.022	.017	-.126	-1.286
Cohort 3	-.008	.019	-.069	-.419
Cohort 4	-.004	.026	-.021	-.141
Cohort 5	.002	.029	.010	.064
Log average wealth	-.023	.006	-.299****	-3.975
Cognitive ability	-.007	.007	-.080	-.966
Grit	**-.003**	**.005**	**-.037**	**-.508**
Agreeableness	-.004	.012	-.030	-.343
Extroversion	-.004	.010	-.032	-.351
Neuroticism	.010	.007	.115	1.567
Conscientiousness	-.015	.010	-.118	-1.465
Openness	.019	.008	.186*	2.333

Note. F (17, 164) = 5.56, p < .001. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$, $^{****}p < .0001$.

Table 5. Regression model predicting consumption as a proportion of income from domain-specific impulsive behaviors, Big Five personality, cognitive ability, and demographic covariates

	Unstandardized Coefficients		Standardized Coefficients	
Variable	*B*	Standard Error	*B*	*t*
Gender	.006	.009	.045	.661
Birthdate	-.002	.001	-.266*	-2.063
Hispanic	-.004	.015	-.017	-.251
Black	.038	.012	.223***	3.259
Years of Education	-.002	.002	-.102	-1.218
Cohort 2	-.023	.017	-.128	-1.352
Cohort 3	-.004	.019	-.030	-.189
Cohort 4	.006	.025	.032	.217
Cohort 5	.007	.028	.038	.246
Log average wealth	-.021	.006	-.262***	-3.509
Agreeableness	-.008	.012	-.057	-.679
Extroversion	-.002	.010	-.017	-.193
Neuroticism	.016	.007	.184*	2.446
Conscientiousness	-.011	.010	-.088	-1.153
Openness	.022	.008	.210**	2.668
Cognitive ability	-.004	.007	-.052	-.630
Domain-Specific Impulsive Finance Behavior	**.012**	**.006**	**.152***	**2.056**
Domain-Specific Impulsive Food Behavior	.003	.007	.034	.417
Domain-Specific Impulsive Exercise Behavior	.009	.004	.138*	1.977
Domain-Specific Impulsive Interpersonal Behavior	-.020	.008	-.192*	-2.366

Note. F (20, 161) = 5.66, p < .001. *p < .05, **p < .01, ***p < .001, ****p < .0001.

Table 6. Bivariate correlations among domain-specific self-controlled behaviors, conscientiousness, and self-control

	Domain-Specific Impulsive Food Behavior	Domain-Specific Impulsive Finance Behavior	Domain-Specific Impulsive Exercise Behavior	Domain-Specific Impulsive Interpersonal Behavior	Conscientiousness	Self-Control
Domain-Specific Impulsive Food Behavior						
Pearson's r	1	.414****	.334****	.380****	**-.209***	**-.497****
N	1577	1576	1574	1576	**273**	**1574**
Domain-Specific Impulsive Finance Behavior						
Pearson's r		1	.254****	.353****	**-.235****	**-.324****
N		1576	1574	1576	**273**	**1573**
Domain-Specific Impulsive Exercise Behavior						
Pearson's r			1	.248****	**-.169****	**-.244****
N			1574	1574	**272**	**1571**
Domain-Specific Impulsive Interpersonal Behavior						
Pearson's r				1	**-.198****	**-.290****
N				1576	**273**	**1573**
Conscientiousness						
Pearson's r					1	.299****
N					3761	272
Self-Control						
Pearson's r						1
N						1575

Note $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$, $^{****}p < .0001$.