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DISCUSSION PAPER SERIES

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ABSTRACT

The Predictive Power of Self-Control for Life Outcomes*

This study investigates the predictive power of self-control for individuals and their children using population representative data. We use the well-established Brief Self-Control Scale to demonstrate that people's trait self-control is highly predictive of their life outcomes. Higher self-control is associated with better health, education, and employment outcomes as well as greater financial and overall well-being. Importantly, self-control often adds explanatory power beyond more frequently studied personality traits and economic preferences. The self-control of children is correlated with that of their parents, while higher parental self-control is also linked to fewer behavioral problems among children. Our results suggest that social interventions targeting self-control may be beneficial.

JEL Classification: D91, D01, J24

Keywords: Brief Self-Control Scale, personality traits, intergenerational transmission

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The human capacity to exert self-control is arguably one of the most powerful and beneficial adaptations of the human psyche.

Tangney et al. (2004, p. 272)

1 Introduction

Self-control is fundamental to understanding human behavior. The ability to exert self-control assists people in overriding their immediate impulses, resisting temptation, and, as a consequence, achieving their long-term goals. Those with a greater capacity for self-control are predicted to have a healthier lifestyle, obtain more education, achieve more labor market success, and experience greater financial well-being (see, e.g., Duckworth and Seligman, 2005; Moffitt et al., 2011; Tangney et al., 2004). These key outcomes not only shape people's personal life chances, but can also drive a society's overall living standards through their effects on productivity.

While the use of the Big Five personality traits in explaining such life outcomes is now well-established among economists (Almlund et al., 2011; Borghans et al., 2008; Heckman et al., 2021), trait self-control has received only limited attention—likely due to a shortage of high-quality data on self-control.[1] The empirical evidence on self-control often comes from small, non-representative samples of children, university students, and adults. Much of the evidence is based on short-term outcomes or, in one case, longer-term outcomes for a single birth cohort (Moffitt et al., 2011). Population representative evidence on the consequences of self-control is more limited. Harrison et al. (2010) elicit time-inconsistency as indicated by a hyperbolic discounting function in an artefactual field experiment to investigate its link to smoking in the Danish population, while Bradford et al. (2017) link the consumption decisions of U.S. adults to the extent of their present-bias using survey-based choice experiments. Using a measure related to ours, Strömbäck et al. (2017) show that self-reported indicators of self-control predict the financial decisions and well-being of Swedes.

We make several important contributions. First, we provide the first comprehensive empirical understanding of the implications of self-control using population representative data from the 2017 Innovation Sample of the German Socio-Economic Panel (SOEP–IS). The SOEP-IS is novel in now including the Brief Self-Control Scale (BSCS) which is a well-established measure

[1] Self-control is closely related to various concepts in psychology, sociology, and neuroscience (such as self-regulation, impulsivity, delay of gratification, inattention-hyperactivity, executive function, willpower, and conscientiousness, see Moffitt et al., 2011), where studies on self-control are more common (Duckworth and Kern, 2011).

of trait self-control (Tangney et al., 2004). We are thus able to use a common framework to investigate the role of self-control in predicting key life outcomes in an extraordinarily broad range of domains, including educational attainment, health and health-related behaviors, labor market outcomes, financial well-being, and life satisfaction. This broad perspective allows us to connect much of the previous literature that focuses on the role of self-control in single domains. While our analysis of self-control and life outcomes is descriptive, the richness of our data allows us to assess the role of self-control after controlling for an extensive set of potential mediators and to gauge the predictive power of self-control using machine learning techniques. Second, we explore the understudied issue of whether trait self-control has explanatory power beyond that attributable to other more commonly utilized measures of personality traits (the Big Five) as well as time and risk preferences. Third, we provide unique evidence on the intergenerational implications of parental self-control for child development. The household context of our data allows us to measure both parent and offspring self-control in a coherent approach, as well as to observe child development across multiple domains, including health, education, and behavioral problems. Throughout, we discuss our findings in the light of the existing literature in economics as well as personality and developmental psychology.

Our results demonstrate that differences in people's capacity for self-control are highly predictive of their life outcomes. Those with more trait self-control engage in healthier behaviors and have better physical and mental health than do those with less trait self-control. They also have greater financial well-being and higher life satisfaction—a commonly used proxy for well-being overall (Kahneman and Krueger, 2006)—providing direct evidence of the benefits of greater self-control. Importantly, self-control appears to influence labor market success mainly by raising educational attainment; once education is accounted for there is only a weak relationship between self-control and most labor market outcomes. In all, we examine 25 different life outcomes, allowing us to provide a uniquely comprehensive picture of the benefits of higher self-control.

In assessing the predictive power of self-control, we adopt a scaffolding approach, estimating a sequence of models increasing in controls. We begin with models that incorporate only baseline exogenous controls before moving on to account for other personality traits and economic preferences as well as endogenous drivers of people's life chances. The results from this exercise

demonstrate that, in many cases, self-control has substantial power to predict people's life outcomes even in the presence of a rich set of potential confounders. In particular, self-control often adds explanatory power beyond that associated with more commonly used measures of time and risk preferences and the Big Five personality traits. Variable selection methods (e.g., the least absolute shrinkage and selection operator (LASSO) and the "R^2 rank") indicate that self-control is more relevant than many other explanatory factors in understanding the variation in mental and physical health, health behaviors, educational attainment, and life satisfaction.

Finally, we exploit the unique household structure of our data to investigate the intergenerational consequences of self-control. We find a modest correlation in the self-control of adult children and their parents. Moreover, children whose parents have greater self-control exhibit fewer behavioral problems. Evidence of systematic differences in child outcomes by parental self-control contributes to a better understanding of intergenerational correlations in, for example, education and health, pointing towards a potential mechanism underlying social immobility.

In sum, our results emphasize that higher levels of self-control have broad benefits for people, their offspring, and societies as a whole. As a consequence, self-control emerges as a clear target for social interventions. Such interventions exist and have been shown to be successful when centered on children (Alan et al., 2019; Alan and Ertac, 2018; Piquero et al., 2016; Sorrenti et al., 2020).

Our research speaks to studies in the field of personality psychology and economics that follow the canonical approach for measuring personality traits via responses to validated survey items. Demonstrating that self-control is often predictive over and above more commonly used Big Five personality traits and economic preference measures, is an important contribution given researchers' strong interest in these concepts (e.g., Almlund et al., 2011; Borghans et al., 2008; Heckman et al., 2021). Research in behavioral economic theory is also increasingly expanding theoretical models of intertemporal choice to incorporate self-control using models of quasihyperbolic discounting (also called β-δ models) or dual-self decision making.[2] While the capacity for self-control is fundamental in both fields, the conceptual and measurement ap-

[2] A non-exhaustive list of economic models of self-control and its implications for individual behavior includes Angeletos et al. (2001); Bénabou and Tirole (2004); Carrillo and Gromb (1999); Fudenberg and Levine (2006); Gruber and Kőszegi (2001); Gul and Pesendorfer (2001, 2004); Heidhues and Kőszegi (2009, 2010, 2015, 2017); Kőszegi (2005); Laibson (1997, 1998); Loewenstein and Prelec (1992); O'Donoghue and Rabin (1999a,b, 2000, 2001, 2003); Phelps and Pollak (1968); Strotz (1955); Thaler and Shefrin (1992).

proaches used to study self-control are often distinct. In related work, we demonstrate that the survey-based BSCS used in the present study characterizes people in a way that is consistent with the conceptual framework of O'Donoghue and Rabin (1999a) (Cobb-Clark et al., 2021).[3]

2 Data

2.1 The Estimation Sample

Our analysis takes advantage of novel data from the Innovation Sample of the German Socio-Economic Panel (SOEP). The SOEP provides household-level panel data for approximately 30,000 individuals who are surveyed annually (Goebel et al., 2019). In 2011, an innovation sample of respondents (SOEP–IS) began to be surveyed in conjunction with the core SOEP sample (SOEP–Core). The goal was to provide the scope for exploring new and novel survey items (Richter and Schupp, 2015). By 2014, the SOEP–IS included more than 5,500 people living in over 3,500 separate households.

Following a competitive tender process, we were offered the opportunity to integrate the 13-item version of the Self-Control Scale—the Brief Self-Control Scale (BSCS)—into the SOEP–IS in 2017. The SOEP–IS is representative of the German population aged 17 and over by design, as is our estimation sample of respondents with valid self-control measures (see Online Appendix A). These data provide the first opportunity to study self-control in a sample that is population representative not only of individuals, but also of entire households. A handful of studies have analyzed (proxies of) self-control in cohorts representative of young or older people using U.S. data from the National Longitudinal Survey of Youth (NLSY; Nofziger, 2008; Perrone et al., 2004) and the Health and Retirement Study (HRS; Mezuk et al., 2017; Schlafmann, 2020). In absence of psychometrically validated self-control measures, proxies are often derived from domain-specific measures of behavioral and attitudinal problems. In contrast, our measure is specifically designed to capture trait self-control more generally across domains (Tangney et al., 2004; Tsukayama et al., 2012) and has been psychometrically validated. The richness of the SOEP–IS data means that we can consider a vast array of life outcomes (e.g., educational

[3]Specifically, in Cobb-Clark et al. (2021) we build on the conceptual framework of O'Donoghue and Rabin (1999a) and propose an empirical approach that elicits self-control problems and sophistication about them by comparing respondents' ideal, expected, and realized body weight. Linking the resulting classification of people's self-control types to the BSCS, we find that time-consistent individuals score higher on trait self-control than naïve and sophisticated individuals who do have self-control problems—as one would expect.

attainment, labor market attachment, income, assets and savings, physical and mental health, health-related behaviors, and life satisfaction) while accounting for key factors such as socio-demographic characteristics, intelligence, economic preferences, and personality traits. We discuss the details of our measures as we introduce them below (see Table A2).

The BSCS was administered in 2017 to 2,090 respondents who were first surveyed in 2012 and 2013. We omit 129 respondents (6.2 percent) who did not provide complete information for all 13 items of the scale.[4] Drawing on 2017 data, augmented with additional data from 2012–2018, provides us with a final estimation sample of 1,961 individuals living in 1,269 households.[5]

2.2 The Brief Self-Control Scale

There are two distinct main approaches to the empirical measurement of self-control. The first follows the canonical approach for measuring personality traits in personality psychology and economics (e.g., Almlund et al., 2011; Borghans et al., 2008; Heckman et al., 2021), and uses responses to validated batteries of questions regarding self-control. The second approach is rooted in experimental economics, with most evidence coming from university students. It considers preferences as fundamental parameters of utility functions and measures an individual's level of self-control by identifying the present-focus parameter β along with the time-consistent, long-run discounting parameter δ using β-δ models (e.g., Laibson, 1997; O'Donoghue and Rabin, 1999a; Phelps and Pollak, 1968). People's incentivized choices are observed when they are confronted with monetary or effort trade-offs over time in multiple price list or convex time budget elicitation tasks (e.g., Andreoni et al., 2015; Andreoni and Sprenger, 2012; Augenblick et al., 2015; Augenblick and Rabin, 2019).

In the present study, we adopt the standard approach in personality psychology and economics which relies on survey-based measurement. This strategy allows us to embed our self-control measure in a mature household panel survey. Along with providing representative data, our measurement of self-control matches the elicitation logic of the other measures of personality traits and economic preferences in this data, enhancing our ability to compare predictive power across several dimensions of non-cognitive skills. Meta-analysis reveals that survey-based

[4] In a less conservative sensitivity analysis, we calculate the self-control score allowing for up to two missing items. Our broad conclusions remain unchanged, though the predictive power of self-control occasionally increases due to greater estimation precision as a result of increased sample size.

[5] Specifically, we use data from the SOEP–IS (doi:10.5684/soep.is.2018).

measures of self-control also have the advantage of having higher convergent validity than do task-based measures (Duckworth and Kern, 2011).

More precisely, we measure self-control using the brief (13-item) version of the well-established Self-Control Scale (Tangney et al., 2004) that has attracted more than 6,000 Google Scholar citations since its publication. The BSCS provides a domain-general measure of trait self-control with high predictive validity (de Ridder et al., 2012). The 13-item scale is highly correlated (0.92–0.93) with the full 36-item scale (Tangney et al., 2004), but is more suitable for large surveys. It has high internal consistency with a Cronbach's alpha between 0.79 and 0.85 (Bertrams and Dickhäuser, 2009; Tangney et al., 2004) and a high test–retest reliability both after three (0.87) (Tangney et al., 2004) and seven (0.82) weeks (Bertrams and Dickhäuser, 2009).

The 13 items are introduced by the following question: "Using the scale provided, please indicate how much each of the following statements reflects how you typically are." Individuals respond using a five-point Likert scale ranging from 1 ("not at all") to 5 ("very much"). Table 1 lists all 13 items—they assess, for example, whether people can resist temptation or can work towards long-term goals. Importantly, most of the items do not specifically refer to self-control, reducing the chances of deliberate non-response or social desirability-induced response bias. Additionally, the items appear in two blocks separated by other questions making it less obvious to respondents that all 13 items belong to the same survey module. We obtain an aggregate measure of self-control by standardizing each individual item to be mean zero and standard deviation one, summing the result over all 13 items, and standardizing the final score again.[6] There is a substantial degree of variation in responses for individual items as well as in our aggregated self-control measure (see Figure A1).

—Insert Table 1 here—

3 Self-Control as a Predictor of Key Life Outcomes

We begin by investigating the extent to which self-control predicts a broad range of important life outcomes across five domains: (i) educational attainment; (ii) health and health-related behaviors; (iii) the labor market; (iv) financial well-being; and (v) life satisfaction. Some of the associations between self-control and life outcomes that we study have been investigated using

[6] We standardize each individual item to ensure comparability even if response behavior differs across items. Standardizing only the aggregated score, but not the individual items, does not change the results.

smaller and more selected samples (see, e.g., de Ridder et al., 2012; Duckworth and Seligman, 2005; Moffitt et al., 2011; Tangney et al., 2004, for reviews). In other cases, including labor force participation, hours of work, oversleeping, and all dimensions of life satisfaction, we are unaware of any previous studies that examine the role of self-control. Our analysis is distinct in its focus not only on whether self-control has predictive power, but also on how predictive self-control is relative to key socio-demographic characteristics, personality traits, and economic preferences. After describing our empirical strategy and presenting our results, we conclude by running a horse race designed to stress test the predictive power of self-control.

3.1 Estimation Strategy

We investigate the predictive power of self-control using a multifaceted approach. First, we regress each outcome (y_i) on self-control and a set of control variables:

$$y_i = \alpha + \beta S_i + \boldsymbol{X}_i'\boldsymbol{\gamma} + \varepsilon_i, \tag{1}$$

where S_i captures self-control and β is the coefficient of interest.[7] $\boldsymbol{X}_i$ is a vector of baseline controls (gender, parental education, migration background, number of siblings, and religion as well as age, state, and interview-month fixed effects) assumed to be exogenous with respect to self-control. In addition, ε_i is the error term and all other terms are parameters to be estimated.

Equation (1) is estimated using OLS. Given the large number of outcomes we consider, in addition to conventional p-values, we also report p-values adjusted for multiple hypothesis testing using the method suggested by Romano and Wolf (2005a,b). These adjusted p-values account for the family-wise error rate (i.e., the probability of making at least one type-I error when performing our 25 hypothesis tests) which conventional p-values do not.[8]

Second, we augment our linear regression results with additional statistics on the predictive power of self-control. Specifically, we employ the least absolute shrinkage and selection operator (LASSO) as a direct test of the capacity of self-control to predict our outcomes of interest. The LASSO is a regression method which incorporates variable selection and is frequently used in machine learning applications to enhance the prediction accuracy and parsimoniousness of the resulting model. In effect, the LASSO chooses the subset of variables from the larger set of all

[7] Figure B1 unpacks the association between self-control and the outcome variables along the level of self-control and suggests that linearity is a fair approximation.

[8] We use the Stata ado file `rwolf` by Damian Clarke, see Clarke et al. (2020). In order to account for control vectors that vary with specification, we repeat the procedure and condition on specific control variables accordingly.

potential predictors (self-control plus all control variables) which contributes the most to the predictive power of the model (see Tibshirani, 1996).[9] If self-control is chosen when using the LASSO, we have evidence that self-control contributes to explaining outcomes over and above the (non-selected) control variables.

However, the LASSO only provides information on whether self-control is chosen (i.e., has a non-zero coefficient) or not. Consequently, we expand on this by reporting not only each model's adjusted R^2, but also what we refer to as the "R^2 rank." The latter results from a process in which variables are added to the model sequentially. Specifically, each outcome variable is regressed separately on each of the K right-hand side variables (self-control plus controls) in the specification. The variable with the highest adjusted R^2 is added to the model. The outcome is then regressed on the selected variable with the highest adjusted R^2 in the first round and, in turn, the remaining $K-1$ variables. This process continues until all K variables have been added to the model. A variable's R^2 rank indicates the round in which that variable was added to the model. Thus, the lower the R^2 rank of self-control, the more it contributes to explaining variation in outcomes.[10]

Finally, we investigate the predictive power of self-control by considering two extensions of our baseline model. The first extension (see Section 3.3) adds controls for measures of people's Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and emotional stability) and economic preferences (patience and general willingness to take risks). The second extension (see Section 3.4) exploits the full potential of our rich survey data by also accounting for additional factors (mediators), some of which may themselves be endogenous with respect to self-control. These include marital status, height (considered to be a proxy for nursing in early childhood, see Currie, 2009), measures of fluid and crystallized intelligence as well as other outcomes. We control, for example, for education when regressing wages on self-control. As education is itself partially determined by self-control, the estimated coefficient on self-control in this extended model will capture only partial (direct) effects.

[9] The LASSO is a penalized OLS estimator that minimizes the sum of squared residuals while adding a penalty term that is chosen so as to maximize the out-of-sample fit of the model (see James et al., 2013). We refer to variables as "chosen" or "selected" when their coefficient is non-zero. We implement the LASSO using the Stata ado file `lassoShooting` by Christian Hansen (see Belloni et al., 2014).

[10] A similar sequential procedure is suggested by Imbens (2015) and Imbens and Rubin (2015) to select the variables used to estimate propensity scores. An advantage of a sequential procedure is that the correlation structure between explanatory variables is taken into account when assessing a variable's contribution to outcome variation.

In addition to pointing towards potential mechanisms, these extensions are useful for two other reasons. First, these models provide a stress test for the predictive power of self-control. If self-control is economically meaningful and statistically significant in the face of these additional controls, this provides evidence of its predictive power over and above those factors typically considered in economic analyses. Getting over this bar is particularly difficult in our final specification given the potential for the overall effect of self-control to be understated in models with endogenous controls (Falk et al., 2020). Second, variation in estimates across specifications allows us to make a tentative assessment regarding the potential for omitted variable bias to confound our results (see Altonji et al., 2005; Oster, 2017). There is a recent debate, for example, about the extent to which the relationship between self-control and life outcomes found in early psychological studies on delay of gratification is due to socio-economic factors that have not been taken into account (Falk et al., 2020; Watts et al., 2018). Although our control variables include measures of socio-economic status, our estimates should be considered conditional correlations between self-control and life outcomes and we abstain from making causal claims.

3.2 Baseline Results

The association between self-control and 25 different life outcomes is shown in Table 2 (see Table B1 for descriptive statistics). Point estimates are in column 1 in the unit of the outcome variable (see the subheadings). The bars in column 2 compare the relative coefficient size across all outcomes; i.e., each depicts the estimated coefficients of self-control when all outcomes are standardized. Columns 3–9 include the other statistics discussed above.

Higher self-control is related to better health outcomes and more positive health behaviors. Previous studies have investigated the link between self-control and specific health conditions and behaviors such as addictive behaviors, eating, and weight using selected samples (see de Ridder et al., 2012, and the references therein). We confirm these results for physical health more generally and extend them to the mental health domain. A one standard deviation (std.) increase in self-control is associated with a 0.24 std. increase in people's Mental Health Component Summary (MCS) score and a 0.14 std. improvement in their Physical Health Component Summary (PCS) score. The MCS and PCS scores are well-established scales that measure health very broadly using a battery of items (see Table A2 for details). Those with greater

self-control also adopt more active and healthier lifestyles. A one std. increase in self-control is linked to a 23 percent (5.4 percentage points (pp.)) reduction in smoking, an 11 percent (5.4 pp.) increase in monthly sports participation, and a 15 percent (5.1 pp.) reduction in the chance of oversleeping at least once a week. While higher self-control is not associated with a reduction in the frequency of drinking alcohol, it is linked to a reduction in the quantity consumed; a one std. increase in self-control is associated with a 24 percent (7.4 pp.) reduction in drinking more than two standard drinks per occasion. Perhaps not surprisingly, greater self-control also translates into fewer body weight issues. On average, people's Body Mass Index (BMI) is 2.4 percent lower and the probability of being obese falls by 5.0 pp. (24 percent) with each one std. increase in self-control. These effects are highly significant even when we consider the Romano–Wolf adjusted p-values which account for multiple hypothesis testing (see columns 3 and 4).

—Insert Table 2 here—

There is also a statistically significant relationship between self-control and both educational attainment and subsequent labor market outcomes. Specifically, a one std. increase in self-control is associated with 0.2 additional years of education and approximately a 10 percent higher likelihood of having at least an academic-track high school (3.5 pp.) or college (2.2 pp.) education. These results are in line with previous findings demonstrating that as children's ability to self-regulate grows, so too does their academic achievement (see, e.g., Alan and Ertac, 2015; McClelland et al., 2014; Morrison et al., 2010). While it is easy to imagine a joint relationship between education and self-control, the directionality appears to be stronger from self-control to academic achievement than the reverse. Within-individual changes in self-control over time predict subsequent changes in students' grade point averages, but not the reverse, for example (Duckworth et al., 2010). Cobb-Clark et al. (2019) find that a reform of the German educational system, which exogenously raised the average years of schooling students received, had no discernible effect on their self-control. Thus, there seems to be no reverse causality between years of schooling and self-reported measures of trait self-control, suggesting that our findings may capture educational achievement that is a consequence rather than a determinant of self-control. At the same time, there is evidence that university education has a causal effect

in increasing patience (Perez-Arce, 2017), pointing to a relationship between education and time preferences more generally.

Higher self-control is also linked to better outcomes across four of the six employment measures we consider. Hourly wages are 5.4 percent higher with each one std. increase in self-control, while the probabilities of being currently unemployed or having been unemployed in the last 10 years are 27 percent (1.6 pp.) and 17 percent (5.2 pp.) lower, respectively. On average, a one std. increase in self-control results in two fewer months spent in unemployment over the previous 10 years. Interestingly, self-control is unrelated to either the extensive margin (labor force participation) or intensive margin (working hours) of labor supply. Previous work has shown that people with self-control problems are more likely to suffer income shocks, rely on easy-access high-cost forms of credit, and be denied credit (Gathergood, 2012; Meier and Sprenger, 2010). Importantly, the foundations of this relationship appear to be set in childhood. Studies of British cohort data, for example, find that children with low self-control experience 1.6 times as many months of adult unemployment as those with high self-control (Daly et al., 2015), while each std. increase in childhood self-control is associated with a 4–5 pp. increase in having a pension as much as four decades later (Lades et al., 2017).

We also find that financial well-being is higher in households with more self-control.[11] Each std. increase in household self-control is associated with a 9 percent (4.4 pp.) increase in the chances that the household owns (rather than rents) their home (see Schlafmann, 2020, for a similar result). Self-control is unrelated to whether households hold financial assets (such as stocks) in their portfolios and has only a small association with the chances of saving each month, a relationship that is not statistically significant once we adjust for multiple hypothesis testing. As the ability to save likely depends on home ownership, we also estimate our savings model separately for home owners and renters. While renters are 5.9 pp. more likely to save each month as their self-control increases, the relationship between self-control and the savings of home owners is not statistically significant.

Consistent with Wiese et al. (2018), increased self-control is associated with significant increases in people's overall life satisfaction. This appears to be true, in part, because more self-controlled people have fewer conflicts between their current desires and their longer-term

[11] These are household-level outcomes. For couple-headed households, we therefore include only one of the two spouses in the analyses, choosing the one with the higher level of self-control to capture household capacity for self-control. Table B2 presents results separately for single- and couple-headed households.

goals (Hofmann et al., 2012, 2014). Stutzer and Meier (2016) argue, for example, that obesity is associated with lower subjective well-being only among those who report having limited self-control. Moreover, we are the first to document that higher levels of self-control go hand in hand with higher satisfaction with health, work, and family lives. Greater self-control is associated with better health and employment outcomes. It is thus not particularly surprising that this is also reflected in the greater satisfaction that more self-controlled people have in these domains. Self-control also appears to be linked to a slight increase in the likelihood of being married and being a parent, suggesting that the relationship between self-control and satisfaction with family life may, in part, operate through family structure.[12]

How important is self-control in predicting key life outcomes? Our baseline specifications account for self-control plus 29 additional control variables (when including age and interview month linearly as single factors). The number of variables chosen by the LASSO is shown in column 5 of Table 2 (it ranges between 0 and 4 out of the 30 explanatory variables), while column 6 indicates whether self-control is among them. Self-control is chosen as a predictor in seven of the 25 outcomes we consider, namely mental health, smoking, quantity of alcohol consumed, and all four life satisfaction measures. In fact, self-control is the only predictor variable chosen by the LASSO in the case of overall life satisfaction and satisfaction with family life. Self-control appears to be less relevant for labor market outcomes and financial well-being.[13] This impression is confirmed by the relative size of the self-control coefficient in column 2.

The predictive power of self-control can also be understood by focusing on its R^2 and R^2 rank (see columns 7 and 8 of Table 2). Overall, our control variables explain between 1 (saving of home owners) and 60 percent (labor force participation) of the variation in the outcomes we consider. Self-control is among the 10 most important variables in explaining this variation in all but four cases (frequency of alcohol consumption, labor force participation, home ownership, and holding financial assets). Moreover, self-control is the single most important variable in understanding mental health, overall life satisfaction as well as satisfaction with work and family life. It is also the second most important factor (after age) in explaining physical health, most health behaviors, and health satisfaction.

[12]Results available upon request.

[13]In the case of financial well-being, the LASSO sometimes selects no variables indicating that our set of controls does a rather poor job in explaining these outcomes.

Taken together, our baseline results emphasize the broad benefits of self-control for a myriad of key life outcomes. People with higher levels of self-control have higher educational attainment and experience higher levels of physical, mental, economic, and overall well-being than do those with less capacity for self-control.

3.3 Controlling for Other Personality Traits and Economic Preferences

Self-control is conceptually distinct from other personality traits (e.g., Big Five) and economic preferences (risk attitudes, patience). Nonetheless, people's traits and preferences may operate jointly to influence the decisions that people make and the outcomes that they achieve (Almlund et al., 2011). Moreover, many traits and preferences also have a direct role in the self-regulation of behavior leading them to be correlated in expected ways with trait self-control (Hoyle and Davisson, 2016). We investigate this by regressing self-control on our measures of the Big Five personality traits, patience, and risk preference (see Table 3). The strongest predictors of self-control, both in terms of magnitude and statistical significance, are conscientiousness, emotional stability, and agreeableness (see Tangney et al., 2004, for similar results). The relationship between patience and self-control, while weaker, is also significant and positive. Thus, self-control is significantly related to other personality traits and economic preferences in intuitive ways. The adjusted R^2 is 0.41 suggesting, however, that there may be variation in self-control that is unexplained by the other non-cognitive skills and economic preferences we consider.[14]

—Insert Table 3 here—

This raises the possibility that self-control may provide additional traction in understanding people's life chances. Consequently, we add measures of the Big Five personality traits and economic preferences to our baseline specification in order to assess the explanatory power of self-control over and above these constructs. This is an important extension of previous studies that, to date, have considered a narrower range of non-cognitive skills and economic preferences.

The resulting point estimates for our self-control index are in column 1 of Table 4. We test the null hypothesis that these estimates are the same as in the baseline regression (column 1 of Table 2) using a standard t-test; p-values are provided in column 4. We reject the equality of the baseline and extended estimates at the 5 percent level only in the case of mental health,

[14]Measurement error in the personality trait and preference variables may also contribute to the adjusted R^2 being less than one.

educational attainment, working hours, and satisfaction measures. For these life outcomes, accounting for other personality traits and economic preferences adds explanatory power and, in some cases, reduces the estimated effect of self-control, but does not generally render it statistically insignificant. Self-control continues to be chosen by the LASSO in five cases and it continues to rank among the 10 most important variables based on the R^2 rank in all but 10 cases, despite the greater number of variables considered (see columns 6 and 8).

—Insert Table 4 here—

We assess the predictive power of self-control relative to that of the other personality traits and economic preferences by plotting their resulting R^2 ranks from our extended specification in Figure 1. Outcomes are displayed along the vertical axis, while the horizontal axis indicates the R^2 rank of our key traits and preferences.[15] The leftmost trait in each row has the highest predictive power (the lowest R^2 rank) for that particular outcome; the rightmost trait has the least predictive power (contributes the least to the adjusted R^2 of that outcome). So, in the case of mental health, for example, emotional stability is most and patience is least predictive. Self-control is consistently ranked first in almost all models of health outcomes and health behaviors indicating that it has more predictive power than all of the other traits and preferences taken into account. Also in the case of high school attainment, unemployment in the last 10 years, home ownership, and savings, self-control is the most predictive among all the traits we consider. Moreover, self-control is highly predictive of all domains of life satisfaction with the exception of satisfaction with family life.

—Insert Figure 1 here—

Taken together, our results demonstrate that self-control has additional predictive power beyond the more commonly used Big Five personality traits and risk and time preferences, particularly when we consider health, health behaviors, and life satisfaction. As Heckman et al. (2021) note, however, this may be due to the greater precision of the 13-item BSCS measure. Each Big Five trait is, in contrast, characterized using three items, while risk tolerance and patience are each captured by only one, potentially leading these measures to be more prone to measurement error. We investigate this issue by considering less detailed (i.e., lower

[15]Specifications include a total of 40 controls; eight personality traits and preferences (for which R^2 rank is displayed), three indicators for missing values in these traits and preferences, and the 29 control variables from the baseline specification in which age and interview month enter through linear terms (for which R^2 rank is not displayed). The consequence is that the R^2 rank can range between 1 and 40.

dimensional) self-control measures to study whether they perform as well as the 13-item BSCS and whether they continue to have predictive power when controlling for the Big Five and economic preferences.

We reduce the dimensionality of our self-control measure by relying on only three items of the scale to mimic the construction of the Big Five traits. Specifically, we use the standardized average score over the three BSCS items suggested by Morean et al. (2014): "I am good at resisting temptation"; "People would say I have iron self-discipline"; and "I am able to work effectively towards long-term goals". Like the 13-item BSCS, this lower dimensionality self-control measure derived from a subset of only three items is also highly predictive of the life outcomes we consider (see columns 1–4 in Table 5). This continues to be true for several outcomes even after controlling for the Big Five personality traits as well as economic preferences (columns 5–9). Although some estimates are significantly different to those that do not account for the Big Five and economic preferences, self-control remains a significant predictor of more than a third of the life outcomes we consider.

—Insert Table 5 here—

Figure 2 reproduces Figure 1 using the Morean et al. (2014) three-item self-control measure. In the case of physical health, smoking, and unemployment in the last ten years, the use of the three-item Morean et al. (2014) measure rather than the full 13-item BSCS, results in self-control being ranked second rather than first among the personality traits and preferences. In the case of mental health, the rank of self-control relative to other traits indicates greater (not lower) predictive power when we use the Morean et al. (2014) measure, while for BMI, obesity, home ownership, and savings, self-control is ranked first among all traits irrespective of which measure we use. Thus, it is not the case that the predictive power of self-control relative to that of the other personality traits and preferences necessarily decreases when we use the lower dimensional measure of self-control.

—Insert Figure 2 here—

We also consider two alternative approaches to reduce the dimensionality of our self-control measures (see Table B3). First, we use the respondents' (reversed and normalized) answer to the item "I wish I had more self-discipline" which we assume to be the most direct, single-item measure of a person's self-control (columns 1–3). Comparing the one-dimensional, direct

measure with the multi-dimensional BSCS is similar to the analysis of risk preferences suggested by Dohmen et al. (2011). Second, we follow Buser et al. (2020) and compare people with high self-control (in the top 30 percent of the distribution) to those with low self-control (bottom 30 percent) (excluding those in between) which helps to account for traits being measured on varying scales (columns 4–6). Also these lower dimensionality measures confirm that self-control continues to be highly predictive for several of the life outcomes we consider, both in the absence and presence of other personality traits and economic preferences in the estimation.

Taken together, this exercise indicates that the additional predictive power of self-control is not solely due to the additional precision of the 13-item BSCS measure relative to that associated with the shorter Big Five and economic preference scales.

3.4 Additionally Controlling for Endogenous Factors

Finally, we consider the results of models that account for relevant, but potentially endogenous, factors in addition to our baseline controls as well as the Big Five personality traits and economic preferences (see Table 6). As discussed above, this does not provide an estimate of the overall predictive power of self-control for people's life outcomes, but rather is best thought of as a stress test for the predictive power of self-control. Our models of health outcomes and health behaviors, for example, now account for marital status, intelligence, highest educational degree, gross monthly labor market income, and non-employment—all of which may be driven by self-control (see the notes of Table 6 for details).

—Insert Table 6 here—

There are several key messages. First, even when controlling for education and income, greater capacity for self-control is linked to improvements in people's physical and mental health and the health behaviors they adopt. Given the central role that education and income play in models of health production (see Grossman, 1972), the consistent relation of self-control—over and above that related to human capital and financial resources—to good health is quite remarkable. On balance, these results are consistent with previous evidence that greater capacity for self-control results in better health outcomes in part because of the health choices that people make (see de Ridder et al., 2012).

Second, self-control continues to have a strong association with educational attainment even after we account for mental and physical health, fluid and crystallized intelligence, and marital

status. In contrast, the estimated effect of self-control regarding hourly wages drops by almost three-quarters relative to the baseline specification once education is controlled and is no longer statistically significant. Our estimates also fall by half or more when we focus on unemployment. Thus, self-control appears to influence labor market success mainly by raising educational attainment. Interestingly, some studies reach a similar conclusion regarding the mechanism linking other personality traits to labor market outcomes (see Almlund et al., 2011, p. 107f). Third, there is little relationship between self-control and financial well-being once we control for income and other personality traits.

Finally, the association between self-control and life satisfaction vanishes in the face of our endogenous controls. Life satisfaction encapsulates life outcomes such as labor market success, good health, and educational achievement. The disappearance in the estimated effect of self-control once these endogenous outcomes are accounted for is consistent with self-control influencing people's well-being largely through these channels.

4 The Intergenerational Implications of Self-Control

The household nature of our data provides us with a unique opportunity to study the intergenerational implications of parental self-control.[16] We are particularly interested in the transmission of self-control from parents to their children and in the relationship between parents' self-control and their children's development. We consider each below.

4.1 Intergenerational Transmission of Self-Control

Previous researchers have identified intergenerational links in many personality traits (see Anger, 2012; Brown and van der Pol, 2015; Falk et al., 2021; Grönqvist et al., 2017, for reviews) and constructs related to time preferences (see Kiessling et al., 2021, Table G.1 for a review). Due to a lack of suitable data to study the intergenerational transmission of self-control, such evidence has been lacking with regard to self-control.[17] We make an important

[16] We also investigate assortative mating on self-control. Figure C1 shows that people's level of self-control is positively correlated with that of their partners. The estimated linear slope is 0.28. Previously, only Boutwell and Beaver (2010) have documented a statistically significant correlation of 0.11 in the incidence of low self-control within U.S. couples raising small children.

[17] Nofziger (2008) and Boutwell and Beaver (2010) use children's behavioral issues as a proxy for low self-control at ages 3 or 10–11, respectively. Proxying mothers' self-control with behaviors such as abortions, binge drinking, smoking, and job losses or six items from a scale measuring impulsivity, they provide suggestive evidence for a positive correlation between children's and mothers' proxied level of self-control.

contribution in using representative data from the SOEP-IS to study the correlation in the trait self-control of parents and their young-adult (aged 17+) children.

We begin by using the household structure of the SOEP-IS data to link parents with their young-adult children (age 17+) who are SOEP respondents in their own right. They answer the usual questionnaires—providing rich information about their life experiences and outcomes—and remain in the sample even after moving out of their parents' household. This implies that they provide information about their own self-control which can be linked to the self-control of at least one of their parents. Importantly, self-control is measured at the same time (in the 2017 wave) in the same way (self-reported 13-item BSCS measure) for both parents and their adult children. We observe 299 pairs involving adult children (n = 188) and their parents. Although adult children range in age from 17 to 55, their median age is 22. Consequently, we refer to this as the parent-young-adult sample.

We use our parent-young-adult sample to investigate the intergenerational transmission of self-control. Specifically, the correlation between parents' and young-adult children's 13-item BSCS score is shown in Figure 3. The positive slope parameter of 0.14 is significant at the 10 percent level, indicating that there is a modest correlation in the self-control of parents and their adult children.[18]

—Insert Figure 3 here—

4.2 Parental Self-Control and Child Development

What we know about the role of parental self-control in influencing child development is surprisingly limited. We are unaware, for example, of any evidence linking parental self-control to children's educational success, though the role of self-control in improving one's own academic achievement (see, e.g., Duckworth and Seligman, 2005; Tangney et al., 2004) together with the intergenerational transmission of self-control makes such a link plausible. The relationship between parental self-control and child health has also not been studied extensively, despite the

[18]Figure C2 shows this correlation by parent's and offspring's gender. Unexpectedly, we only find a statistically significant relationship in the self-control of parent-offspring pairs of opposite sex. Specifically, the estimated slopes are 0.37 (standard error 0.11) between mothers' and their son's self-control and 0.32 (standard error 0.18) between fathers' and their daughter's self-control. In contrast, the estimated slopes between mothers and daughters and between fathers and sons are close to zero. Given the limited sample sizes underlying the opposite-sex transmissions (between 62 and 88 observations), these results may need to be interpreted with caution and should be further investigated in future research.

strong associations between self-control and one's own health.[19] Similarly, behavioral issues in children and adolescents have been linked to their patience and self-control (e.g., Alan and Ertac, 2018; Castillo et al., 2011), yet we know very little about the way that parents' own capacity for self-control shapes this relationship.

Conceptually, however, it is reasonable to expect parents' self-control to influence children's life chances not only through the direct intergenerational transmission of self-control, but also through the role that parental self-control has in shaping parenting behavior and the family environment. Consequently, we focus our analysis on investigating the role of parental self-control in influencing three critical domains of child development: (i) health; (ii) education; and (iii) socio-emotional behavior.

Children younger than age 17 are not interviewed in the SOEP survey. As they do not respond to the 13-item BSCS (or any other) questionnaire themselves, we do not have a measure of their self-control. We do have information about their other outcomes, however, because they are the focus of separate child-focused questionnaires which survey one parent (usually the mother) about children's development. Survey items include, for example, questions related to children's education, health, typical behaviors, and characteristics. Using the child-focused surveys, we are able to identify 908 parent-child pairs involving 572 unique children which we refer to as our parent-child sample.

We draw on both our parent-child and parent-young-adult samples to investigate the relationship between parents' self-control and their children's outcomes.[20] We use the most recent data available to construct a series of outcomes. BMI and an indicator for attending (or having graduated from) an academic-track high school (*Gymnasium*) are available for both our parent-young-adult and parent-child samples, while measures of children's behavioral problems and pro-social behavior are only available in our parent-child sample for those children up to age 16 (see Figure C3).

[19] One exception is Stoklosa et al. (2018), who find that U.S. parents' self-control problems are associated with an increase in the likelihood that their children are obese.

[20] There is some overlap in the two samples. Specifically, we observe 187 individuals (or 298 parent-child pairs) both as children (information taken from pre-2017 waves) and young adults (aged 17+) (in 2017). This implies that, all together, we are able to identify 1,078 parent-offspring pairs (from 370 unique families) involving 671 offspring in the SOEP-IS data. Because only few persons are observed as children and later on as adults—and because the child outcomes precede the measurement of the BSCS for them—the data structure at hand does not allow us to investigate whether children's own self-control is the mechanism that links parental self-control to their development.

We begin with the relationship between parents' self-control and several key aspects of their children's development. Parental self-control is measured using the self-control score of the child's mother, the child's father, or an average of the two in the 59 percent of cases when both are available.[21] If only one is available, in the vast majority of cases (82 percent) this is the mother's score. Similar to the analysis in Section 3, we consider three sets of control variables. Our baseline model includes the offspring's gender, age-in-years and state-of-residence fixed effects, as well as five-year age bins of both parents and indicators for parents' migration background.[22] In addition, we report the results of a separate analysis of mothers and fathers in Table C2. It is important to bear in mind, however, that small samples may leave our gender-based analysis under-powered.

There is little relationship between parents' self-control and their children's BMI (see Table 7). The resulting point estimate is close to zero and is statistically insignificant. This relationship is not gender neutral, however. A one std. increase in a mother's self-control is associated with a reduction in her daughter's BMI of 3.6 percent, while a one std. increase in a father's self-control is associated with a reduction in his son's BMI of 3.6 percent (see Table C2). In contrast, parental self-control is not significantly linked to children's educational attainment as measured by the probability that the child attends an academic-track high school. Although the point estimate is positive, as expected, it is small (1.3 pp.) and statistically insignificant. The same holds true when we estimate models that differentiate by the gender of both parents and children.

—Insert Table 7 here—

The relationship between parents' capacity for self-control and children's behavioral issues is assessed using information from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ measures behavioral problems along four dimensions: emotional symptoms, conduct problems, hyperactivity/inattention, and peer relationship problems (see Table A2). We find that parental self-control is negatively related to children's behavioral problems. Each one std. increase in parental self-control is associated with a large and statically significant re-

[21] Results are similar when consistently choosing either the parent with higher self-control or the one with lower self-control, instead of taking the average, in cases where both parents' self-control information is available (see Table C1).

[22] Where we only observe the self-control of one parent, we set explanatory variables for the unobserved parent to zero and control for indicators of observing only one parent and that parent's gender. We also control for year-of-observation fixed effects in order to account for the possibility that childhood information is collected in a previous wave.

duction in the child's behavioral problems (0.27 std. of the SDQ score). Moreover, the LASSO procedure chooses parental self-control as the only predictor of the child's behavioral problems from a total of 30 possible predictors. Parental self-control also is the largest contributor to the adjusted R^2. Thus, parents with greater self-control have children with fewer behavioral issues, which has been shown to predict adult outcomes such as higher educational attainment, lower unemployment, better mental health and life satisfaction (Clark and Lepinteur, 2019; Layard et al., 2019). Consistent with this, we also find a positive association between parental self-control and pro-social behavior, with parental self-control ranking third in terms of its contribution to the R^2.[23] Differentiating by gender, we find that both the reduction in behavioral problems and the increase in pro-social behavior are driven mostly by mothers (see Table C2). These baseline results are in line with Meldrum et al. (2018) who find maternal self-control to be more effective than paternal self-control in reducing childhood aggression.

As in Section 3, we assess the predictive power of parental self-control by considering two extensions of our baseline model. The first adds controls for measures of parents' other personality traits (Big Five traits) and economic preferences (risk attitudes and patience), introduced earlier (see Section 3.3), in addition to our baseline controls. The second also accounts for additional factors that may mediate the effect of parental self-control (see Section 3.4).

We no longer find a significant relationship between parental self-control and children's pro-social behavior when controlling for parents' Big Five personality traits, risk attitudes, and patience, and the effect on children's SDQ scores is reduced to 0.15 std. However, parental self-control is still the only predictor of the child's behavioral problems chosen by the LASSO algorithm from the 50 controls considered. It also continues to rank first in contributing to the adjusted R^2.

Finally, we assess the power of parental self-control to predict children's developmental outcomes by also controlling for parental measures of marital status, education, crystallized and fluid intelligence, gross labor market income, and employment (see third panel). Parental self-control continues to be economically meaningful and negatively related to children's behavioral problems. Parental self-control is chosen as the only predictor from 82 right-hand side variables

[23]Pro-social behavior is assessed as a further, separate dimension of the SDQ (standardized to mean zero and std. one), capturing whether the child is typically considerate, helpful, and shares with others, for example.

by the LASSO algorithm; it also remains the largest contributor to the model's overall adjusted R^2.

Given the range of outcomes, we again present Romano-Wolf p-values that adjust for multiple hypothesis testing next to conventional p-values. In addition, with siblings present in our data, we also provide p-values that are based on standard errors clustered at the family level. Clustering the standard errors at the family level does not alter the significance levels. While more conservative than conventional ones, the Romano–Wolf p-values confirm the significant relationship between parental self-control and children's behavioral problems in the baseline specification and are not far off (0.12) for the specification including endogenous controls.

Taken together, our results lead us to conclude that the dimension of child development that is most strongly related to parental self-control is children's behavior, in particular the incidence of behavioral problems. Parents' capacity for self-control appears to have less bearing on their children's health and educational attainment. These findings are consistent with parental self-control operating, at least in part, through parenting styles and the family environment. For example, Nofziger (2008) shows that a mother's capacity for self-control determines, to some degree, the way she chooses to punish and supervise her children. Moreover, low parental self-control is associated with significantly less family cohesion, reduced parental efficacy, and more family conflict, resulting in a less positive family environment overall (Meldrum et al., 2016).

5 Conclusions

Choice inevitably involves trade-offs. It is therefore not surprising that people's capacity for self-control has wide-ranging implications for the choices they make, the behaviors they adopt, and the outcomes they achieve. Our research extends the self-control literature by—for the first time—providing population representative evidence on the predictive power of self-control for physical, mental, and economic well-being, and the intergenerational implications of parental self-control for children's outcomes. In this respect, our paper offers a holistic view of the wide range of possible consequences of trait self-control for people's life outcomes and its potential role in social and economic (im)mobility.

Our results lead us to a number of important conclusions. First, trait self-control not only predicts the disparity in a broad range of life outcomes, but in many cases, does so above

and beyond the way that the Big Five personality traits, time and risk preferences do. Our results demonstrate the importance of self-control for good health, educational achievement, and financial well-being. Moreover, self-control is linked to wage rates and unemployment experiences, though this effect operates mainly through educational attainment. Once education is controlled, self-control no longer predicts labor market success. Our findings also highlight that higher self-control translates into higher levels of satisfaction with health, work, family life, and life overall. In short, self-control is closely linked to people's overall well-being. At a societal level, the capacity for self-control is likely to support productivity (and hence living standards) as well as reduce the costs of providing health care, education, and social assistance.

Second, the benefits of high self-control extend beyond the outcomes people achieve for themselves and into the next generation. We find evidence that the capacity for self-control is transmitted from parents to their offspring. In addition, parents with higher levels of self-control have children who have fewer behavioral problems. This link between parental self-control and children's behavioral problems deepens our understanding of the intergenerational transmission of educational, labor market, and health outcomes and points to a potential mechanism for social immobility.

Third, our research findings emphasize the comprehensive benefits of higher self-control for individuals themselves, their offspring, and potentially for societies as a whole. Consequently, they provide a strong argument in favor of social interventions that aim to increase self-control. Numerous programs to enhance children's self-control and related skills have been developed and evaluated positively (see Alan et al., 2019; Alan and Ertac, 2018; Sorrenti et al., 2020, and the meta-analyses by Piquero et al., 2010, 2016).[24] Our work suggests the benefits of such programs are potentially quite large. Moreover, as life outcomes typically improve linearly in self-control (see Figure B1), higher levels of self-control may provide similar benefits to people along the entire self-control distribution. The implication is that policy makers could opt for either targeted interventions that explicitly focus on those with low self-control or more universal interventions (avoiding stigmatization) without incurring an efficiency loss.

Finally, our results reinforce the critical importance of self-control for personality psychology and economics (e.g., Almlund et al., 2011; Borghans et al., 2008; Heckman et al., 2021). Importantly, trait self-control adds explanatory power for people's key life outcomes—and those

[24] Strayhorn Jr (2002) reviews various components and mechanisms underlying self-control training programs.

of their children—beyond that obtained from more commonly used Big Five personality traits and measures of time, risk, and social preferences alone. The availability of high-quality data on trait self-control provides an exciting opportunity to close the gap in our understanding of the way that self-control influences human behavior.

Tables

Table 1: Brief Self-Control Scale

	Item
1.	I am good at resisting temptation.
2.	I have a hard time breaking bad habits. (reversed item)
3.	I am lazy. (reversed item)
4.	I say inappropriate things. (reversed item)
5.	I do certain things that are bad for me, if they are fun. (reversed item)
6.	I refuse things that are bad for me.
7.	I wish I had more self-discipline. (reversed item)
8.	People would say I have iron self-discipline.
9.	Pleasure and fun sometimes keep me from getting work done. (reversed item)
10.	I have trouble concentrating. (reversed item)
11.	I am able to work effectively towards long-term goals.
12.	Sometimes, I cannot stop myself from doing something, even if I know it is wrong. (reversed item)
13.	I often act without thinking through all the alternatives. (reversed item)

Notes: The Brief-Self-Control Scale is taken from Tangney et al. (2004). Questions marked as "reversed item" enter the final self-control score reversed. The questions are asked in two blocks (block 1: questions 1–6 and 9–13; block 2: questions 7 and 8) separated by other questions. Figure A1 presents the distribution of responses to the items.

Table 2: Conditional relationship between self-control and life outcomes, baseline estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Point estimate		p-value		LASSO		R^2		
	abso-lute	stand-ardized	unad-justed	Romano–Wolf	# vars chosen	SC chosen	ad-justed	rank	Obser-vations
Health (all in std.)									
MCS	0.236***		0.00	0.00	2/30	yes	0.11	1/30	1,951
PCS	0.142***		0.00	0.00	2/30	no	0.21	2/30	1,951
Health behaviors (all binary, except for BMI in log points)									
Log(BMI)	−0.024***		0.00	0.00	4/30	no	0.09	4/30	1,913
Obesity (BMI>30)	−0.050***		0.00	0.00	3/30	no	0.06	2/30	1,913
Smoking	−0.054***		0.00	0.00	2/30	yes	0.09	2/30	1,676
Alc.: 4+ days a week	−0.009		0.32	0.68	3/30	no	0.10	14/30	1,819
Alcohol: 3+ drinks	−0.074***		0.00	0.00	4/30	yes	0.13	3/30	1,551
Sports	0.054***		0.00	0.00	1/30	no	0.07	2/30	1,958
Oversleeping	−0.051***		0.00	0.06	1/30	no	0.10	2/30	800
Educational attainment (all binary, except for years of education)									
Years of education	0.231***		0.00	0.01	4/30	no	0.21	3/30	1,845
≥ High school	0.035***		0.00	0.04	4/30	no	0.14	7/30	1,862
College	0.022**		0.02	0.21	3/30	no	0.11	9/30	1,961
Labor market performance (all binary, except for log hourly wage, working hours, and months unemployed)									
Log(wage)	0.054***		0.00	0.03	3/30	no	0.21	5/30	901
Labor force parti.	0.006		0.43	0.68	1/30	no	0.60	19/30	1,961
Working hours	0.609		0.14	0.59	2/30	no	0.23	7/30	1,036
Unemployment	−0.016**		0.05	0.32	3/30	no	0.03	4/30	1,133
Unemp. last 10 years	−0.052***		0.00	0.00	1/30	no	0.13	3/30	1,407
Months unemp. 10 yrs	−1.955***		0.00	0.01	4/30	no	0.10	5/30	1,400
Assets and savings (all binary)									
Home owner	0.044***		0.00	0.03	4/30	no	0.14	11/30	1,442
Financial assets	0.013		0.37	0.68	1/30	no	0.06	22/30	1,442
Saving	0.030**		0.03	0.30	0/30	no	0.05	5/30	1,442
Saving (owners)	−0.028		0.17	0.59	0/30	no	0.01	5/30	723
Saving (tenants)	0.059***		0.00	0.04	0/30	no	0.14	2/30	719
Satisfaction with several aspects of life (all in std.)									
Life satisfaction	0.203***		0.00	0.00	1/30	yes	0.07	1/30	1,961
Health satisfaction	0.213***		0.00	0.00	4/30	yes	0.13	2/30	1,961
Satisf. w/ work	0.197***		0.00	0.00	3/30	yes	0.05	1/30	1,117
Satisf. w/ family life	0.154***		0.00	0.00	1/30	yes	0.04	1/30	1,942

Notes: Own calculations based on SOEP–IS, wave 2017. Column 1 gives the estimated coefficient of self-control (standardized to mean 0 and standard deviation 1) on the outcome variable (including separate estimations when conditioning saving on home ownership). Units of measurement of the outcome variables are reported in the subheadings. Column 2 repeats the estimations shown in column 1 when all 27 outcome variables are standardized to mean 0 and standard deviation 1. The bars in column 2 represent the standardized coefficient sizes and allow a comparison across outcome variables. Coefficients represented by pale bars are not statistically significant at the 5 percent level based on conventional critical values. The p-values and the additional statistics in columns 3–9 are calculated as described in the text. All specifications include indicators for gender, father's and mother's education above basic schooling, religious affiliation, migration background in the first and second generation, as well as the number of siblings and age, state, and interview-month fixed effects. For the LASSO procedure and the calculation of the R^2 rank, age and interview month are considered linearly. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Linear regression of self-control on personality traits and economic preferences

	Dependent variable: self-control
Openness	−0.009
	(0.031)
Conscientiousness	0.473***
	(0.030)
Extraversion	−0.073**
	(0.031)
Agreeableness	0.150***
	(0.031)
Emotional stability	0.242***
	(0.030)
Risk tolerance	−0.120***
	(0.029)
Patience	0.103***
	(0.030)
Constant	0.007
	(0.028)
Observations	767
Adj. R^2	0.41

Notes: Own calculations based on SOEP–IS, wave 2017. All variables (including the dependent variable) are standardized to mean 0 and standard deviation 1. The Big Five are measured via 15 items (3 for each personality trait) which use a seven-point Likert response scale (see Gerlitz and Schupp, 2005). Patience and risk preferences are measured using responses (on an 11-point scale) to the questions "Would you describe yourself as an impatient or a patient person in general?" and "How do you rate yourself personally? In general, are you someone who is ready to take risks or do you try to avoid risks?", respectively. Observations with missing information in any of the personality traits are excluded. Standard errors in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Conditional relationship between self-control and life outcomes, controlling for other personality traits and economic preferences

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Specification: baseline controls + personality traits							
		p-value			LASSO		R^2	
	Point estimate	unad-justed	Romano–Wolf	to base-line	# vars chosen	SC chosen	ad-justed	rank
Health								
MCS	0.064**	0.02	0.30	0.00	4/40	yes	0.24	7/40
PCS	0.140***	0.00	0.00	0.89	3/40	no	0.22	2/40
Health behaviors								
Log(BMI)	−0.025***	0.00	0.00	0.82	4/40	no	0.11	4/40
Obesity (BMI>30)	−0.048***	0.00	0.01	0.79	3/40	no	0.07	2/40
Smoking	−0.067***	0.00	0.00	0.13	2/40	yes	0.09	2/40
Alc.: 4+ days a week	−0.002	0.89	0.99	0.27	3/40	no	0.10	33/40
Alcohol: 3+ drinks	−0.062***	0.00	0.00	0.20	4/40	yes	0.14	3/40
Sports	0.056***	0.00	0.01	0.82	1/40	no	0.08	2/40
Oversleeping	−0.038*	0.09	0.69	0.35	1/40	no	0.11	2/40
Educational attainment								
Years of education	0.356***	0.00	0.00	0.01	6/40	no	0.25	13/40
≥ High school	0.055***	0.00	0.00	0.02	3/40	no	0.16	5/40
College	0.046***	0.00	0.00	0.00	3/40	no	0.14	12/40
Labor market performance								
Log(wage)	0.058***	0.01	0.06	0.78	4/40	no	0.21	15/40
Labor force parti.	0.008	0.39	0.97	0.68	1/40	no	0.60	22/40
Working hours	−0.315	0.53	0.98	0.00	1/40	no	0.24	13/40
Unemployment	−0.004	0.68	0.99	0.09	2/40	no	0.03	32/40
Unemp. last 10 years	−0.048***	0.00	0.04	0.74	1/40	no	0.13	3/40
Months unemp. 10 yrs	−1.087	0.12	0.74	0.07	4/40	no	0.10	19/40
Assets and savings								
Home owner	0.056***	0.00	0.04	0.27	4/40	no	0.15	8/40
Financial assets	0.004	0.84	0.99	0.41	1/40	no	0.06	37/40
Saving	0.017	0.33	0.95	0.26	0/40	no	0.06	5/40
Saving (owners)	−0.032	0.22	0.89	0.79	0/40	no	0.01	5/40
Saving (tenants)	0.033	0.19	0.87	0.08	0/40	no	0.15	2/40
Satisfaction with several aspects of life								
Life satisfaction	0.064**	0.03	0.35	0.00	3/40	no	0.13	10/40
Health satisfaction	0.120***	0.00	0.00	0.00	5/40	yes	0.17	3/40
Satisf. w/ work	0.098**	0.02	0.24	0.00	3/40	yes	0.08	2/40
Satisf. w/ family life	0.012	0.68	0.99	0.00	2/40	no	0.09	34/40

Notes: Own calculations based on SOEP–IS, wave 2017. Column 1 gives the estimated coefficient of self-control (standardized to mean 0 and standard deviation 1) on the outcome variable (including separate estimations when conditioning saving on home ownership). The p-values and the additional statistics in columns 2–8 are calculated as described in the text. All specifications include the control variables from Table 2 ("baseline controls") and additionally the Big Five personality traits, patience and risk tolerance, and three imputation indicators whether either of the three (sets of) aforementioned variables is missing and replaced with the lowest values. Column 4 gives the p-value of a t-test whether the point estimate in column 1 of this table is equal to the point estimate of column 1 of Table 2. For the LASSO procedure and the calculation of the R^2 rank, age and interview month are considered linearly. For the number of observations, see column 9 of Table 2. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: The predictive power of self-control in specifications w/o and w/ other personality traits using the Morean et al. (2014) self-control measure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Baseline controls w/o personality traits				Baseline controls w/ personality traits				
		p-value	R^2			p-value		R^2	
	Point estimate	unad-justed	ad-justed	rank	Point estimate	unad-justed	to base-line	ad-justed	rank
Health									
MCS	0.207***	0.00	0.10	1/30	0.070***	0.00	0.00	0.24	4/40
PCS	0.094***	0.00	0.20	2/30	0.065***	0.01	0.01	0.21	4/40
Health behaviors									
Log(BMI)	−0.026***	0.00	0.09	4/30	−0.025***	0.00	0.91	0.11	4/40
Obesity (BMI>30)	−0.051***	0.00	0.06	2/30	−0.048***	0.00	0.50	0.07	2/40
Smoking	−0.021*	0.05	0.07	11/30	−0.016	0.20	0.37	0.08	7/40
Alc.: 4+ days a week	−0.009	0.33	0.10	15/30	−0.006	0.57	0.52	0.10	26/40
Alcohol: 3+ drinks	−0.042***	0.00	0.11	4/30	−0.023	0.10	0.00	0.13	16/40
Sports	0.036***	0.00	0.07	3/30	0.024*	0.07	0.04	0.08	13/40
Oversleeping	−0.028	0.13	0.09	11/30	−0.014	0.48	0.11	0.11	25/40
Educational attainment									
Years of education	0.120*	0.05	0.21	11/30	0.107	0.11	0.68	0.24	21/40
≥ High school	0.018	0.10	0.13	14/30	0.017	0.18	0.80	0.15	29/40
College	0.011	0.22	0.11	13/30	0.017	0.11	0.28	0.13	23/40
Labor market performance									
Log(wage)	0.050***	0.00	0.21	6/30	0.046**	0.01	0.58	0.21	15/40
Labor force parti.	0.006	0.47	0.60	30/30	0.004	0.63	0.72	0.60	14/40
Working hours	0.743*	0.06	0.23	4/30	0.051	0.91	0.00	0.24	35/40
Unemployment	−0.002	0.77	0.03	26/30	0.011	0.21	0.01	0.04	14/40
Unemp. last 10 years	−0.026**	0.04	0.13	11/30	−0.011	0.43	0.03	0.13	13/40
Months unemp. 10 yrs	−1.246**	0.02	0.09	11/30	−0.135	0.83	0.00	0.10	36/40
Assets and savings									
Home owner	0.038***	0.01	0.14	7/30	0.038**	0.01	0.94	0.14	8/40
Financial assets	0.011	0.42	0.06	22/30	0.004	0.78	0.34	0.06	34/40
Saving	0.038***	0.01	0.06	3/30	0.029*	0.06	0.25	0.06	3/40
Saving (owners)	−0.010	0.59	0.01	8/30	−0.001	0.97	0.30	0.00	10/40
Saving (tenants)	0.066***	0.00	0.14	2/30	0.044**	0.05	0.03	0.15	2/40
Satisfaction with several aspects of life									
Life satisfaction	0.166***	0.00	0.05	1/30	0.048*	0.06	0.00	0.13	11/40
Health satisfaction	0.171***	0.00	0.12	2/30	0.082***	0.00	0.00	0.16	3/40
Satisf. w/ work	0.144***	0.00	0.03	1/30	0.048	0.18	0.00	0.08	12/40
Satisf. w/ family life	0.121***	0.00	0.04	1/30	0.014	0.61	0.00	0.09	34/40

Notes: Own calculations based on SOEP–IS, wave 2017. This table gives the coefficient of the Morean et al. (2014) self-control measure on the life outcomes on the left and additional statistics as described in the text. Self-control is measured as the standardized average score of the three items "I am good at resisting temptation," "People would say I have iron self-discipline," and "I am able to work effectively towards long-term goals" as suggested by Morean et al. (2014). The specification in columns 1–4 includes the control variables from Table 2 ("baseline controls"), the specification in columns 5–9 additionally includes the Big Five traits, risk tolerance, and patience; column 7 gives the p-value of a t-test of equality of the coefficients between these two specifications. For the calculation of the R^2 rank, age and interview month are considered linearly. Stars attached to the coefficients summarize the level of statistical significance according to conventional standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Conditional relationship between self-control and life outcomes, controlling for other personality traits, economic preferences, and potentially endogenous factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Specification: baseline controls + personality traits + potentially endogenous controls							
		p-value			LASSO		R^2	
	Point estimate	unadjusted	Romano–Wolf	to baseline	# vars chosen	SC chosen	adjusted	rank
Health								
MCS	0.058**	0.04	0.49	0.00	4/58	yes	0.24	9/58
PCS	0.122***	0.00	0.00	0.28	6/58	no	0.24	3/58
Health behaviors								
Log(BMI)	−0.024***	0.00	0.00	0.99	5/58	no	0.13	5/58
Obesity (BMI>30)	−0.044***	0.00	0.02	0.49	3/58	no	0.08	2/58
Smoking	−0.061***	0.00	0.00	0.46	6/58	yes	0.14	2/58
Alc.: 4+ days a week	−0.006	0.63	0.99	0.63	2/58	no	0.10	37/58
Alcohol: 3+ drinks	−0.059***	0.00	0.01	0.12	4/58	yes	0.13	3/58
Sports	0.049***	0.00	0.02	0.56	2/58	no	0.11	6/58
Oversleeping	−0.047**	0.04	0.51	0.76	1/58	no	0.12	2/58
Educational attainment								
Years of education	0.290***	0.00	0.01	0.22	9/52	no	0.34	12/52
≥ High school	0.048***	0.00	0.02	0.15	5/52	no	0.22	25/52
College	0.038***	0.00	0.02	0.03	5/52	no	0.18	17/52
Labor market performance								
Log(wage)	0.015	0.43	0.99	0.00	6/56	no	0.32	39/56
Labor force parti.	0.009	0.32	0.99	0.65	4/56	no	0.67	30/56
Working hours	−0.319	0.53	0.99	0.00	2/56	no	0.27	24/56
Unemployment	0.005	0.62	0.99	0.01	3/56	no	0.09	32/56
Unemp. last 10 years	−0.028*	0.08	0.83	0.02	2/56	no	0.17	12/56
Months unemp. 10 yrs	−0.001	1.00	1.00	0.00	7/56	no	0.16	45/56
Assets and savings								
Home owner	0.023	0.19	0.92	0.07	5/61	no	0.20	49/61
Financial assets	−0.021	0.23	0.94	0.00	4/61	no	0.14	30/61
Saving	−0.010	0.58	0.99	0.00	4/61	no	0.15	32/61
Saving (owners)	−0.056**	0.03	0.50	0.11	0/61	no	0.06	7/61
Saving (tenants)	0.016	0.50	0.99	0.01	3/61	no	0.27	40/61
Satisfaction with several aspects of life								
Life satisfaction	−0.003	0.92	1.00	0.00	6/61	no	0.30	58/61
Health satisfaction	0.018	0.40	0.99	0.00	5/61	no	0.53	33/61
Satisf. w/ work	0.057	0.16	0.89	0.00	3/61	yes	0.15	10/61
Satisf. w/ family life	−0.014	0.63	0.99	0.00	4/61	no	0.17	26/61

Notes: Own calculations based on SOEP–IS, wave 2017. Column 1 gives the estimated coefficient of self-control (standardized to mean 0 and standard deviation 1) on the outcome variable (including separate estimations when conditioning saving on home ownership). The p-values and the additional statistics in columns 2–8 are calculated as described in the text. All specifications include the control variables from Table 2 ("baseline controls"), the ten additional trait and preference variables from Table 4 ("personality controls"), as well as indicators for the marital status (married, divorced, and widowed, with single as the reference category), body height, and fluid and crystallized intelligence, plus sets of outcome-specific controls: education indicators, labor force participation and employment indicators, income (health, health behaviors); mental and physical health (educational attainment); mental and physical health, education indicators (labor market performance); mental and physical health, education indicators, labor force participation and employment indicators, income (assets and savings, satisfaction with aspects of life). Column 4 gives the p-value of a t-test whether the point estimate in column 1 of this table is equal to the point estimate of column 1 of Table 2. For the LASSO procedure and the calculation of the R^2 rank, age and interview month are considered linearly. For the number of observations, see column 9 of Table 2. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Parental self-control and offspring's outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		p-value				LASSO		R^2		
	Point estimate	unadjusted	Romano–Wolf	family clustered	to baseline	# vars chosen	SC chosen	adjusted	rank	Observations
Baseline specification										
Log(BMI)	−0.007	0.42	0.69	0.52		1/30	no	0.44	24/30	540
High school	0.013	0.58	0.69	0.59		0/30	no	0.11	23/30	399
Overall SDQ	−0.269***	0.00	0.00	0.00		1/30	yes	0.19	1/30	344
SDQ: pro-social	0.110*	0.05	0.26	0.07		0/30	no	0.09	3/30	346
+parental personality traits										
Log(BMI)	0.003	0.75	0.82	0.78	0.16	1/50	no	0.44	34/50	540
High school	0.045	0.14	0.39	0.11	0.06	1/50	no	0.14	16/50	399
Overall SDQ	−0.146*	0.06	0.25	0.05	0.01	1/50	yes	0.24	1/50	344
SDQ: pro-social	−0.050	0.51	0.82	0.51	0.00	0/50	no	0.13	27/50	346
+endogenous controls for parent(s)										
Log(BMI)	−0.001	0.94	0.94	0.94	0.50	1/82	no	0.45	70/82	540
High school	0.025	0.44	0.83	0.41	0.61	1/82	no	0.21	20/82	399
Overall SDQ	−0.208**	0.02	0.12	0.01	0.31	1/82	yes	0.31	1/82	344
SDQ: pro-social	0.034	0.72	0.89	0.68	0.22	0/82	no	0.16	44/82	346

Notes: Own calculations based on SOEP–IS, wave 2017. Column 1 gives the coefficient of parental self-control for the respective outcomes. For definitions of the outcome variables, see Table A2. The age range of offspring is given in Figure C3. When self-control is available for both parents, we use the average of the mother's and the father's self-control. The baseline specification includes indicators for the child's gender, for mother's and father's migration background in the first and second generation, for whether the child-focused questionnaire was answered by the mother, for whether it was answered by both parents, as well as age, state, and survey year fixed effects for the child. Going from the first to the second panel, the number of variables increases by 20 and now includes, for the mother and the father: the Big Five personality traits, risk preference, and patience measures, plus three variables indicating whether the former are missing (with the main variable set to zero in order to keep the observation). In the third panel, we additionally control for indicators for the mother's and father's education, marital status, fluid and crystallized intelligence, labor market income, and employment status. Column 2 gives the conventional p-value of the self-control coefficient based on a t-test. Column 3 gives the Romano–Wolf p-values when the critical t-value is adjusted for multiple hypotheses testing. Column 4 gives the (conventional) p-value when standard errors are clustered at the family level. Column 5 gives the p-value of a test of coefficient equality of the baseline specification self-control coefficient and the self-control coefficient for the respective outcomes reported in the panels with additional control variables. The other columns are as defined as in Table 2 as well as in the text. For the LASSO procedure and the calculation of the R^2 rank, age is considered linearly. Stars attached to the coefficients in column 1 summarize the level of statistical significance according to the unadjusted standard errors in column 2 with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figures

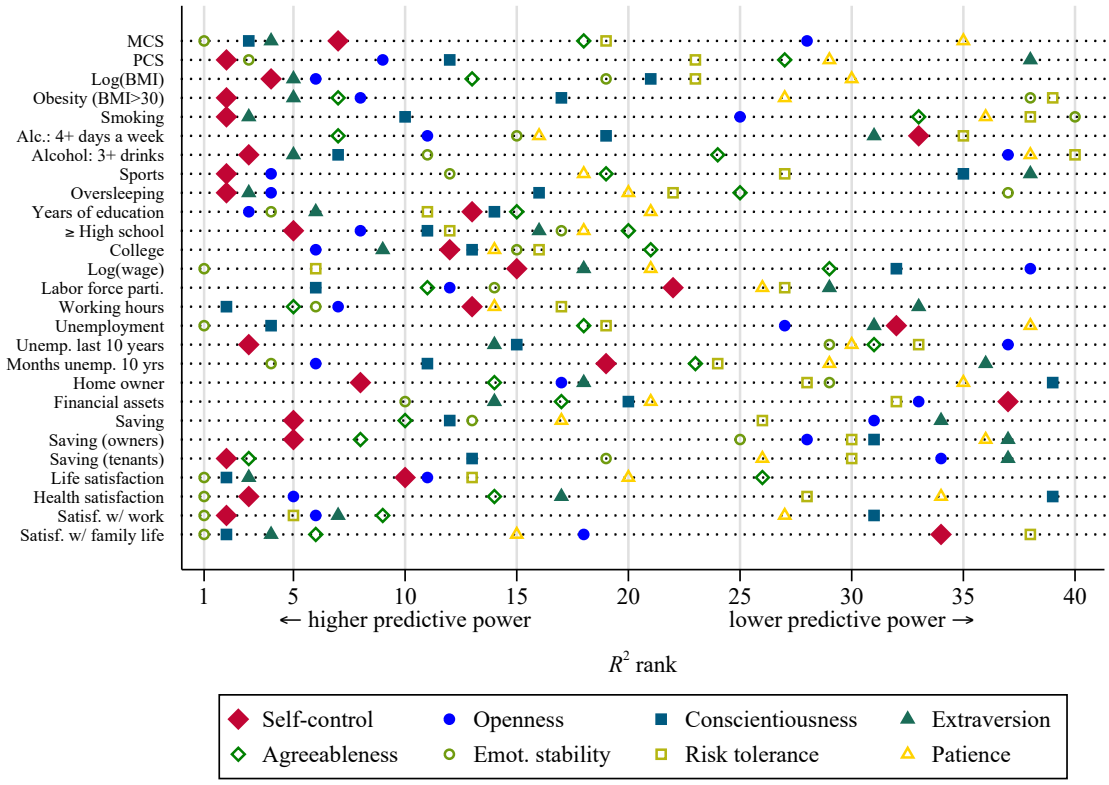

Figure 1: Predictive power ranking of self-control, personality traits, and economic preferences

Notes: Own illustration based on SOEP–IS, wave 2017. This figure plots the R^2 ranks of self-control and the other personality traits resulting from the specification in Table 4. A lower R^2 rank implies higher relative predictive power.

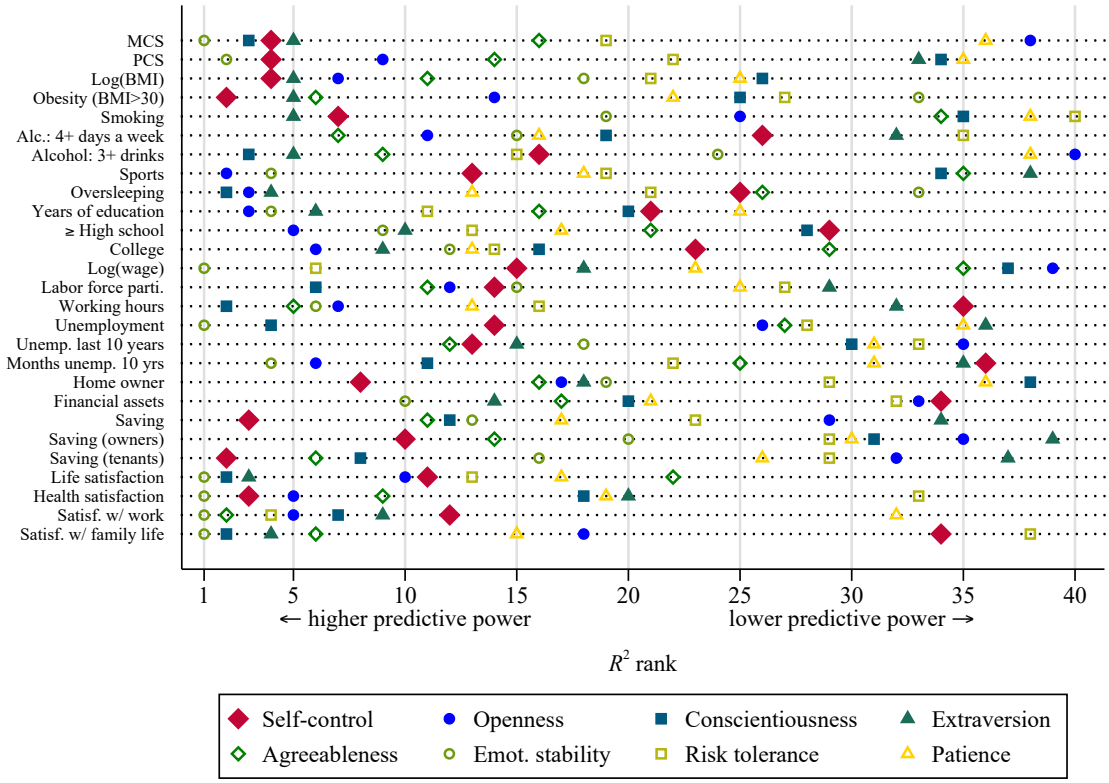

Figure 2: Predictive power ranking of self-control, personality traits, and economic preferences, using the Morean et al. (2014) self-control measure

Notes: Own illustration based on SOEP–IS, wave 2017. This figure plots the R^2 ranks of self-control and the other personality traits resulting from the specification in Table 5, columns 5–9. This plot is similar to Figure 1, but uses the three-item self-control measure suggested by Morean et al. (2014). A lower R^2 rank implies higher relative predictive power.

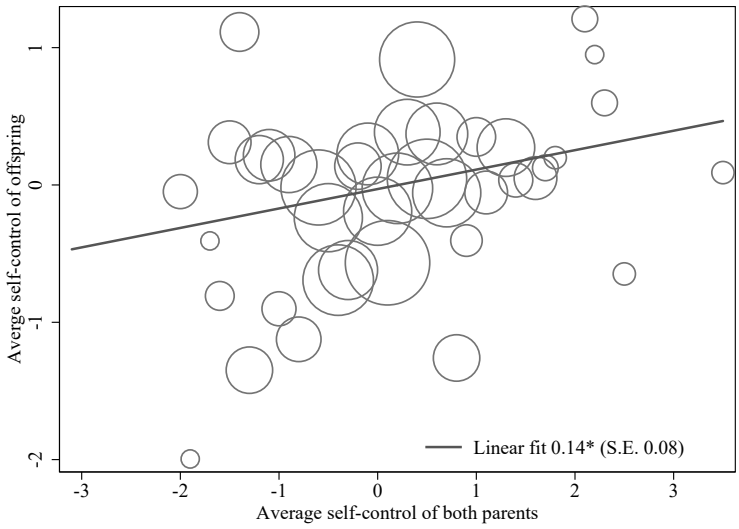

Figure 3: Intergenerational transmission of self-control scores between parents and their adult offspring

Notes: Own illustration based on SOEP–IS, wave 2017. The y-axis gives the average self-control of offspring given the parental self-control on the x-axis. Parental self-control is boiled down to 0.1 bins. The size of the markers refers to the number of parent-offspring pairs in the 0.1 bin on the x-axis. Bins with only one parent-offspring observation are not plotted to avoid outliers. The linear fit is calculated through OLS regression using all 299 parent-offspring pairs. The standard errors are clustered at the offspring level to account for the self-control of some offsprings being considered twice; once in relation to the mother's self-control and once in relation to the father's self-control, if we observe both parents. The statistical significance is stated as: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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The Predictive Power of Self-Control for Life Outcomes

—Online Appendix—

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December 6, 2021

Online Appendix A Data

Online Appendix A.1 Representativeness of Sample

The SOEP–IS was designed to be a representative sample of households and individuals from a cross-sectional and longitudinal perspective (Richter and Schupp, 2015). Therefore, the SOEP–IS stands alone as a representative sample of the German population aged 17 and over separate from the SOEP–Core. Our final sample, however, is smaller than the initial and full SOEP–IS for several reasons, which may introduce selection: (i) self-control was only measured for two sub-samples of the SOEP–IS; (ii) we have to drop observations with incomplete survey responses on self-control or essential background characteristics; and (iii) there is some sample attrition over time.

To test for the representativeness of our sample with respect to the German population, we conduct a careful analysis that investigates whether our final sample and the much larger SOEP–Core are balanced in terms of the most critical demographic characteristics. For this exercise, we consider the largest possible sample of SOEP–Core respondents among all initial and refreshment sub-samples that were first surveyed before the initiation of the Innovation Sample in 2012.[25] From this potential SOEP–Core sample, we consider all respondents with complete basic demographic information, totaling to 21,022 observations in 2016, and compute weighted averages based on the individual cross-sectional weights provided by the SOEP (for details, see Kroh et al., 2015) that are essential for representativeness of the German population.

Table A1 presents the sample averages, together with corresponding standard deviations, of our final SOEP–IS sample and the SOEP–Core sample (see columns 1 to 4). Column 5 contains the p-value to test for statistical differences between the two averages, and reveals that, generally, the samples are very well-balanced. In particular the most basic demographics are remarkably similar across the two samples, with no statistically significant differences in gender, age, or geographical region. Even though the shares of migrants and protestants are statistically different from each other, the disparities are extremely small. Also most variables related to education and the labor market are similar, including own and parental education, unemployment, and income, while labor force participation is lower in the SOEP–IS sample.

The variables related to family structure are also well-balanced—with two exceptions. In our sample slightly more individuals are married (53 percent compared to 49 percent). Also, individuals in our sample have, on average, slightly (0.15) more children, which may result from the higher marriage prevalence. The number of children in our sample (1.43), however, is closer to the national fertility rate computed from administrative statistics. The completed fertility for women born in 1963, which corresponds to the median year of birth in our sample, is 1.59 children (Pötzsch, 2010). Thus, the difference to the SOEP–Core strengthens the representativeness of our sample rather than posing a concern. Moreover, we do not observe other significant differences in the overall household structure, as neither the share of divorcees nor single parents in our sample is different from the SOEP–Core, nor is the incidence of households with children.

Thus, overall, this investigation underlines the representativeness of our sample and strengthens the contribution of this paper to be the first to explore self-control in a population representative sample.

[25] This way, only the most recent sub-samples entering the SOEP–Core in 2013 or later are excluded, which have an exclusive focus on migrants.

Table A1: Balancing table comparing our final SOEP–IS sample with SOEP–Core sample

	(1) Innovation Sample	(2)	(3) Core Sample	(4)	(5) p-value
	Mean	std.	Mean	std.	eq. means
Demographics					
Female	0.529	(0.499)	0.516	(0.500)	0.245
Age	52.261	(18.288)	52.775	(18.868)	0.247
Migration background (direct and indirect)	0.188	(0.391)	0.171	(0.377)	0.058
East (current)	0.216	(0.411)	0.215	(0.411)	0.923
East (in 1989)	0.194	(0.396)	0.190	(0.392)	0.614
Religion: catholic	0.271	(0.444)	0.272	(0.445)	0.877
Religion: protestant	0.327	(0.469)	0.304	(0.460)	0.034
Education					
Years of education†	12.477	(2.729)	12.382	(2.732)	0.152
Mother: intermediate schooling and above	0.326	(0.469)	0.311	(0.463)	0.185
Father: intermediate schooling and above	0.310	(0.462)	0.298	(0.457)	0.291
Labor market					
Labor force participation	0.578	(0.494)	0.649	(0.477)	0.000
Unemployed†	0.039	(0.194)	0.037	(0.189)	0.698
Gross monthly income (in Euros)†	2725.644	(2325.659)	2745.609	(2422.733)	0.806
Household and Family					
Married	0.530	(0.499)	0.492	(0.500)	0.001
Divorced	0.125	(0.331)	0.124	(0.330)	0.886
Number of children	1.428	(1.258)	1.276	(1.234)	0.000
Single parent†	0.059	(0.235)	0.060	(0.238)	0.769
Household with children	0.377	(0.485)	0.371	(0.483)	0.556
Observations	**1,961**		**21,022**		

Notes: Own calculations based on SOEP–IS, wave 2017, and SOEP–Core, wave 33 (1984–2016). Column 1 gives the unconditional mean of the variable stated on the left for Innovation Sample observations with complete self-control information. Column 2 gives the standard deviation of the variable. Columns 3 and 4 include the same information for the corresponding variables in the Core Sample of the SOEP. Column 5 states the p-value of a conventional t-test of equal means between the two sample. p-values above 0.05 indicate that the mean values are not statistically difference from each other. Variables marked with † have fewer observations than all others.

Online Appendix A.2 Variables

Table A2: Definitions of variables

Variable	Definition
Life outcomes	
Health and health behaviors	
MCS and PCS	Mental Health and Physical Health Component Summary score (MCS and PCS, respectively) are assessed through 11 items from the SF12 questionnaire asking about an individual's health status (e.g., physical functioning and bodily pain as well as stress and emotional problems). Summary scores for physical and mental health are obtained via principal component analysis; the final scores are standardized to mean 0 and standard deviation 1.
Log(BMI)	Log Body Mass Index calculated as body weight in kg divided by body height in meter squared.
Obesity (BMI>30)	=1 if a respondent's Body Mass Index exceeds 30, 0 else.
Smoking	=1 if a respondent reports to smoke, 0 else.

Continued on next page

Table A2 – *continued*

Variable	Definition
Alcohol: 4+ days a week	=1 if a respondent reports to drink on at least 4 days of a standard week, 0 else.
Alcohol: 3+ drinks	=1 if a respondent reports to drink at least 3 drinks whenever drinking alcohol, 0 else. Missing if respondent does not drink alcohol.
Sports ($\geq$ once a month)	=1 if a respondent reports to actively engage in sports at least once a month, 0 else.
Oversleep ($\geq$ once a week)	=1 if a respondent reports to oversleep at least once a week, 0 else.
Educational attainment	
Years of education	Years of education from primary to post-secondary education.
$\geq$High school	=1 if a respondent has at least graduated from a *Gymnasium* (academic track) secondary school, 0 else.
College	=1 if a respondent has any form of tertiary education, 0 else.
Labor market performance	
Log(Hourly wage)	Log hourly wage in Euro calculated as the monthly gross income divided by 4.3 times the weekly working hours (wages below 5 Euro were dropped as they indicate misreporting).
Labor force participation	=1 if a respondent is part of the labor force (i.e., working or unemployed and seeking for a job) at the time of the interview, 0 else.
Working hours	=1 if a respondent reports to be registered as unemployed at the time of the interview, 0 else.
Unemployment	=1 if a respondent is unemployed by the time of the interview, 0 else.
Unemp. last 10 years	=1 if a respondent reports to have been unemployed at least once in the 10 years before the interview, 0 else.
Months unemp. 10 yrs	Self-reported number of months spend in unemployment in the last 10 years before the interview (0 if the respondent was always employed).
Assets and savings	
Home owner	=1 if a household owns the dwelling of residence, 0 else.
Financial assets	=1 if a household reports of own financial investments, such as stocks, 0 else.
Saving	=1 if a household confirms to the question "Do you have normally some money left at the end of a month, which you can save or put aside? This can include regular savings deposits for asset formation [...], personal pension schemes, building savings contracts, cash-value life insurances, capital formation savings payment.", 0 else.
Satisfaction with several aspects of life	
Life satisfaction	Answer to the question "How satisfied are you with your life, all things considered?" on an 11-point Likert scale from 0 (low) to 10 (high) and standardized to mean 0 and standard deviation 1.
Health satisfaction	Answer to the question "How satisfied are you currently with the following areas of your life? Your health" on an 11-point Likert scale from 0 (low) to 10 (high) and standardized to mean 0 and standard deviation 1.

Continued on next page

Table A2 – *continued*

Variable	Definition
Satisf. w/ work	Answer to the question "How satisfied are you currently with the following areas of your life? Your work" on an 11-point Likert scale from 0 (low) to 10 (high) and standardized to mean 0 and standard deviation 1.
Satisf. w/ family life	Answer to the question "How satisfied are you currently with the following areas of your life? Your family life" on an 11-point Likert scale from 0 (low) to 10 (high) and standardized to mean 0 and standard deviation 1.
Control variables	
Basic control variables	
Female	=1 if respondent is female, 0 else.
Age (in years)	Respondent's age in years in 2017 (enters regression through fixed effects).
East German	=1 if respondent's answer to the question "Where did you live before German reunification, that is, before 1989?" is "East Germany/East Berlin," 0 else.
Mom/Dad: > basic school	=1 if the highest school degree of respondent's mother/father is more than basic schooling (*Hauptschule*), 0 else.
First-gen. migration	=1 if a respondent is born outside of Germany, 0 else.
Second-gen. migration	=1 if a respondent has at least one parent who is born outside of Germany, 0 else.
Number of siblings	Number of the respondent's siblings.
Religion: catholic	=1 if a respondent is of catholic religion, 0 else.
Religion: protestant	=1 if a respondent is of protestant religion, 0 else.
Religion: none/other (ref.)	=1 if a respondent belongs to no religion or a non-Christian religion, 0 else.
State	Respondent's federal state of residence (enters regression through fixed effects).
Interview month	Calendar month the respondent is interviewed (enters regression through fixed effects).
Personality traits	
Big Five	Extraversion, Conscientiousness, Emotional stability, Openness, Agreeableness; measured via 15 items (3 items each, see Gerlitz and Schupp (2005) for questionnaire) answered on a 7-point Likert scale. Each standardized to mean 0 and standard deviation 1.
Risk tolerance	Answer on 11-point scale to "How do you rate yourself personally? In general, are you someone who is ready to take risks or do you try to avoid risks?" standardized to mean 0 and standard deviation 1.
Patience	Answer on 11-point scale to "Would you describe yourself as an impatient or a patient person in general?" standardized to mean 0 and standard deviation 1.
Extended control variables	
Single (ref.)	=1 if a respondent is single, 0 else.
Married	=1 if a respondent is married, 0 else.
Divorced	=1 if a respondent is divorced, 0 else.
Widowed	=1 if a respondent is widowed, 0 else.
Body height	Respondent's body height in cm.

Continued on next page

Table A2 – *continued*

Variable	Definition
Fluid intelligence	The respondent is asked to assign numbers from 1 to 9 as fast as possible to signs according to a key the respondent sees throughout the test. The test ends after a total of 93 items and the test score is the number of correct assignments in 90 seconds. The test score is standardized to mean 0 and standard deviation 1.
Crystallized intelligence	The respondent is asked to name as many animals as possible in 90 seconds. The test score is the number of uniquely named animals within the time span, see Lang et al. (2007). The test score is standardized to mean 0 and standard deviation 1.
Child outcomes	
Kid: Log(BMI)	Log Body Mass Index calculated as body weight in kg divided by body height in meters squared.
Kid: high school	=1 if attending or having attended *Gymnasium* (academic track) secondary school, 0 else.
Kid: SDQ	Score assessed through the Strength and Difficulties Questionnaire (SDQ) with 4 dimensions (each containing 2–4 items on a 7-point Likert-type scale). Each dimension and their joint average (final score) is standardized to mean 0 and standard deviation 1.
Kid: Pro-social behavior	Average of 4 items on a 7-point Likert-type scale, standardized to mean 0 and standard deviation 1.

Notes: Questions are taken from https://www.diw.de/sixcms/detail.php?id=diw_01.c.583496.de. All information is drawn from 2017 or the most recent retrospective information if part of people's biography, except for patience (2013), fluid and crystallized intelligence (2014), smoking (2018), alcohol consumption (2015), oversleep (2013), and all child outcomes (varying years).

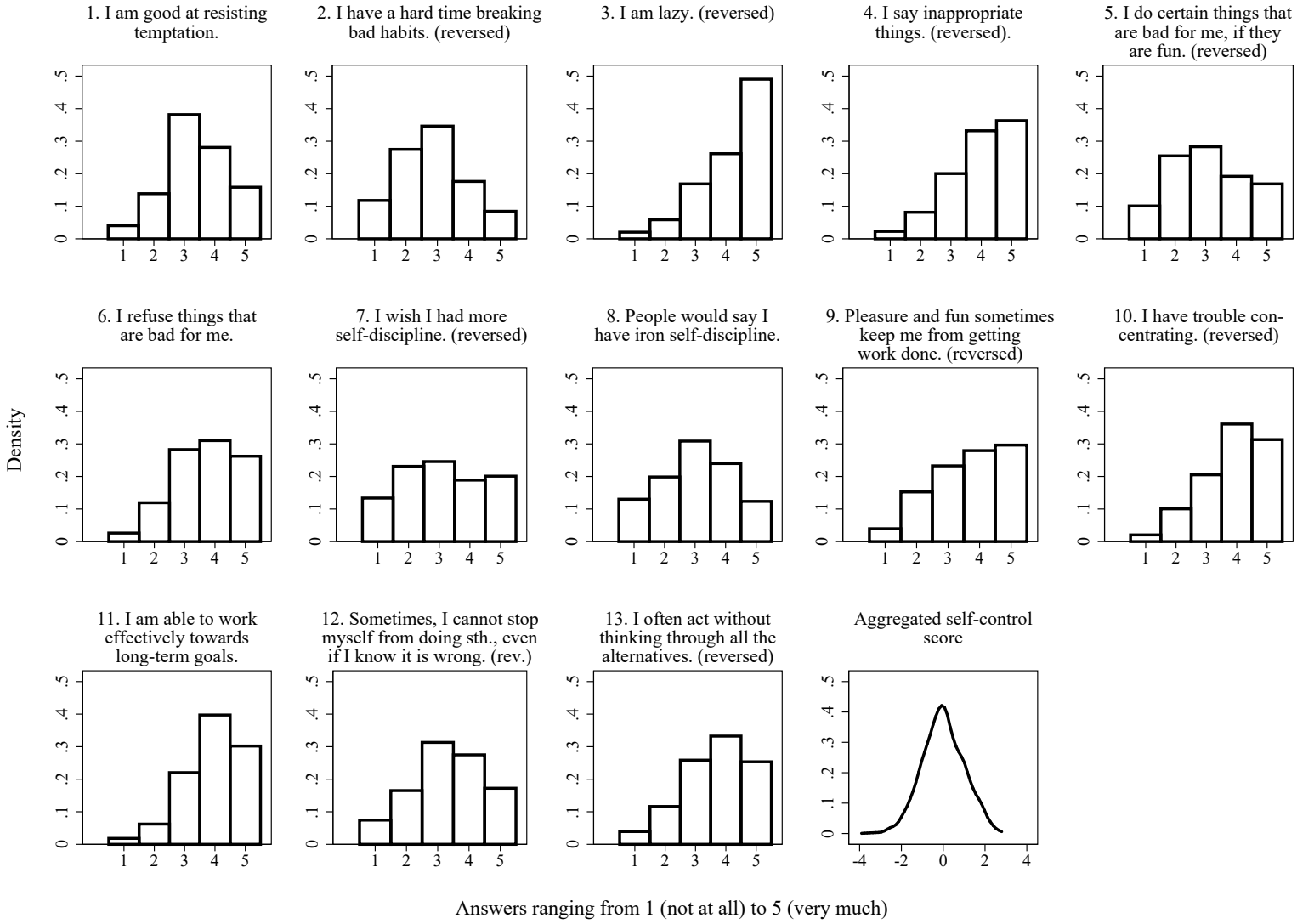

Figure A1: Brief Self-Control Scale questions and answers

Notes: Own illustration based on SOEP–IS. Questions marked as "reversed" enter the final self-control score as reversed items. The questions are asked in two blocks (block 1: questions 1–6 and 9–13; block 2: questions 7 and 8) separated by other questions. The average self-control distribution in the last panel refers to the average over the 13 single-item scores, i.e., the aggregated score. To account for possible different response behavior across items, we first standardize each item, take the average, and standardize the average, again.

Online Appendix B Life Outcomes

Online Appendix B.1 Descriptive Statistics

Table B1: Descriptive statistics for life outcomes

Variable	(1) Unit	(2) Observations	(3) Age range	(4) Mean	(5) Standard deviation
Health					
MCS	std.	1,951	17–92	0.00	1.00
PCS	std.	1,951	17–92	0.00	1.00
Health behaviors					
BMI	points	1,913	17–92	26.63	6.11
Obesity (BMI>30)	1=yes	1,913	17–92	0.21	0.41
Smoking	1=yes	1,676	17–92	0.24	0.43
Alc.: 4+ days a week	1=yes	1,819	19–92	0.18	0.38
Alcohol: 3+ drinks	1=yes	1,551	19–90	0.31	0.46
Sports	1=yes	1,958	17–92	0.49	0.50
Oversleeping	1=yes	800	21–88	0.34	0.47
Educational attainment					
Years of education	years	1,845	18–92	12.48	2.73
$\geq$ High school	1=yes	1,862	18–92	0.36	0.48
College	1=yes	1,961	17–92	0.20	0.40
Labor market performance					
Hourly wage	euros	901	18–65	17.45	10.94
Labor force parti.	1=yes	1,961	17–92	0.58	0.49
Working hours	hours	1,036	18–79	35.84	13.17
Unemployment	1=yes	1,133	18–65	0.06	0.25
Unemp. last 10 years	1=yes	1,407	17–65	0.31	0.46
Months unemp. 10 yrs	months	1,400	17–65	6.87	19.74
Assets and savings					
Home owner	1=yes	1,442	17–92	0.50	0.50
Financial assets	1=yes	1,442	17–92	0.58	0.49
Saving	1=yes	1,442	17–92	0.64	0.48
Satisfaction with several aspects of life					
Life satisfaction	std.	1,961	17–92	0.00	1.00
Health satisfaction	std.	1,961	17–92	0.00	1.00
Satisf. w/ work	std.	1,117	17–82	0.00	1.00
Satisf. w/ family life	std.	1,942	17–92	0.00	1.00

Notes: Own calculations based on SOEP–IS, wave 2017. Column 1 gives the unit of measurement. Variables measured in standard deviations (std.) have been normalized to mean 0 and standard deviation 1. For ease of interpretation, the descriptives for the hourly wage are in euros, the regression analysis in the text use the log hourly wage; similarly for BMI. Column 2 includes the number of observations. Assets and savings are measured at the household level. The upper age range for wage and unemployment in column 3 is restricted to 65: the legal retirement age. Column 4 gives the unconditional mean of the variable, while column 5 reports its standard deviation.

Online Appendix B.2 Additional Results

Table B2: Conditional relationship between self-control and life outcomes, by household type

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		p-value	LASSO		R^2		
	Point estimate	unad-justed	# vars chosen	SC chosen	ad-justed	R^2 rank	Obser-vations
Assets and savings (singles)							
Home owner	0.022	0.21	2/30	no	0.16	25/30	923
Financial assets	0.020	0.26	1/30	no	0.07	19/30	923
Saving	0.034*	0.06	0/30	no	0.05	8/30	923
Saving (owners)	−0.022	0.42	1/30	no	0.04	4/30	420
Saving (tenants)	0.067***	0.01	0/30	no	0.12	3/30	503
Assets and savings (max. of couples)							
Home owner	0.057**	0.02	3/30	no	0.15	6/30	519
Financial assets	−0.002	0.93	0/30	no	0.05	20/30	519
Saving	0.021	0.38	0/30	no	0.03	22/30	519
Saving (owners)	−0.006	0.85	0/30	no	-0.06	18/30	303
Saving (tenants)	0.053	0.19	0/30	no	0.13	22/30	216

Note: Own calculations based on SOEP–IS, wave 2017. The point estimates give the relationship between self-control and the financial well-being indicators. Each point estimate stems from a separate regression. The specification is similar to Table 2. The assets and savings information are available at the household level. The first panel in the table only considers single households. The second panel considers only two-person households, where we use the maximal self-control of both spouses as the household's self-control in the regression models. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B3: Conditional relationship between self-control and life outcomes, using self-discipline and an extreme self-control indicator as explanatory factors

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-discipline			Extreme self-control indicator		
	Point estimate			Point estimate		
	Base-line	+ Person-ality	p-val. diff.	Base-line	+ Person-ality	p-val. diff.
Health						
MCS	0.147***	0.034	0.00	0.298***	0.095**	0.00
PCS	0.113***	0.094***	0.02	0.176***	0.169***	0.82
Health behaviors						
Log(BMI)	−0.027***	−0.027***	0.94	−0.034***	−0.029***	0.46
Obesity (BMI>30)	−0.057***	−0.055***	0.46	−0.071***	−0.056***	0.26
Smoking	−0.011	−0.007	0.25	−0.077***	−0.095***	0.23
Alc.: 4+ days a week	−0.005	−0.002	0.31	−0.004	0.009	0.27
Alcohol: 3+ drinks	−0.044***	−0.031**	0.01	−0.097***	−0.078***	0.22
Sports	0.027**	0.019	0.05	0.069***	0.074***	0.70
Oversleeping	−0.024	−0.006	0.01	−0.071***	−0.053	0.39
Educational attainment						
Years of education	0.099	0.098	0.96	0.307***	0.363***	0.43
≥ High school	0.012	0.013	0.88	0.054***	0.076***	0.10
College	0.008	0.012	0.23	0.023*	0.042**	0.08
Labor market performance						
Log(wage)	0.046***	0.039**	0.24	0.069***	0.071**	0.91
Labor force parti.	0.009	0.009	0.96	0.005	0.013	0.37
Working hours	0.628	0.115	0.00	0.985*	0.052	0.04
Unemployment	0.006	0.016*	0.01	−0.024**	−0.005	0.14
Unemp. last 10 years	−0.025*	−0.014	0.01	−0.065***	−0.048**	0.29
Months unemp. 10 yrs	−0.665	0.074	0.00	−2.507***	−1.294	0.12
Assets and savings						
Home owner	0.032**	0.031**	0.76	0.047**	0.063**	0.34
Financial assets	0.004	−0.001	0.23	0.031	0.021	0.56
Saving	0.014	0.004	0.03	0.040**	0.037	0.87
Saving (owners)	−0.027	−0.023	0.58	−0.003	−0.007	0.91
Saving (tenants)	0.043**	0.020	0.00	0.085***	0.075*	0.68
Satisfaction with several aspects of life						
Life satisfaction	0.123***	0.033	0.00	0.261***	0.101**	0.00
Health satisfaction	0.153***	0.085***	0.00	0.282***	0.153***	0.00
Satisf. w/ work	0.068**	−0.008	0.00	0.265***	0.150**	0.00
Satisf. w/ family life	0.066***	−0.018	0.00	0.191***	0.032	0.00

Note: Own calculations based on SOEP–IS, wave 2017. The specification in columns 1–3 measures self-control using the reversed and standardized score of the item "I wish I had more self-discipline" instead of the full BSCS score as explanatory variable of interest. The first column shows the baseline specification (similar to Table 2), whereas the second column shows the specification that additionally controls for other personality traits and economic preferences (similar to Table 4). Column 3 gives the p-value of a t-test of equality of the coefficients. Columns 4–6 repeat the analysis from columns 1–3 using a binary indicator of whether the BSCS score is in the top 30 percent versus the bottom 30 percent, with observations in-between excluded. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

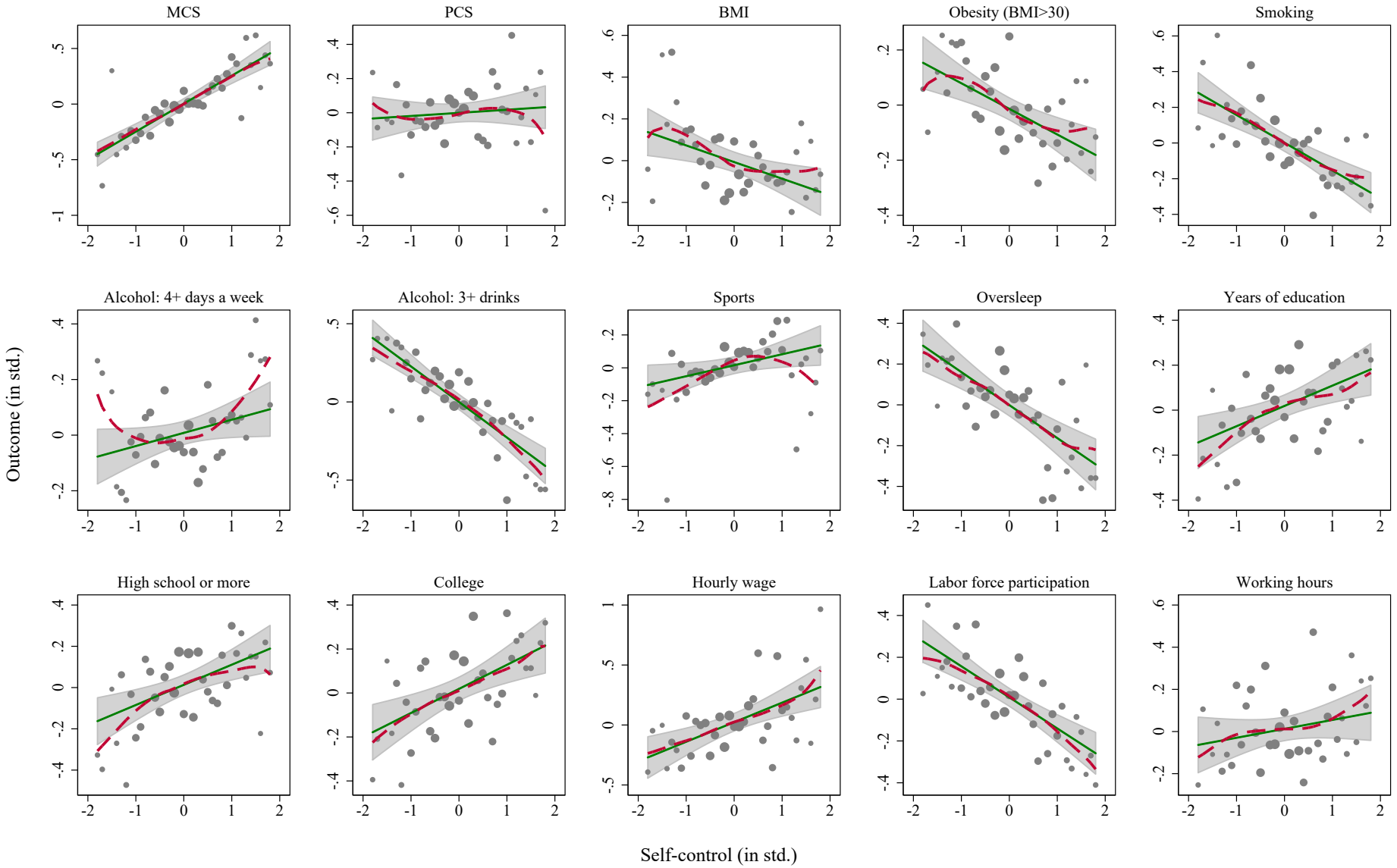

Figure B1: Comparing linear and non-parametric fits for the relationship between self-control and life outcomes

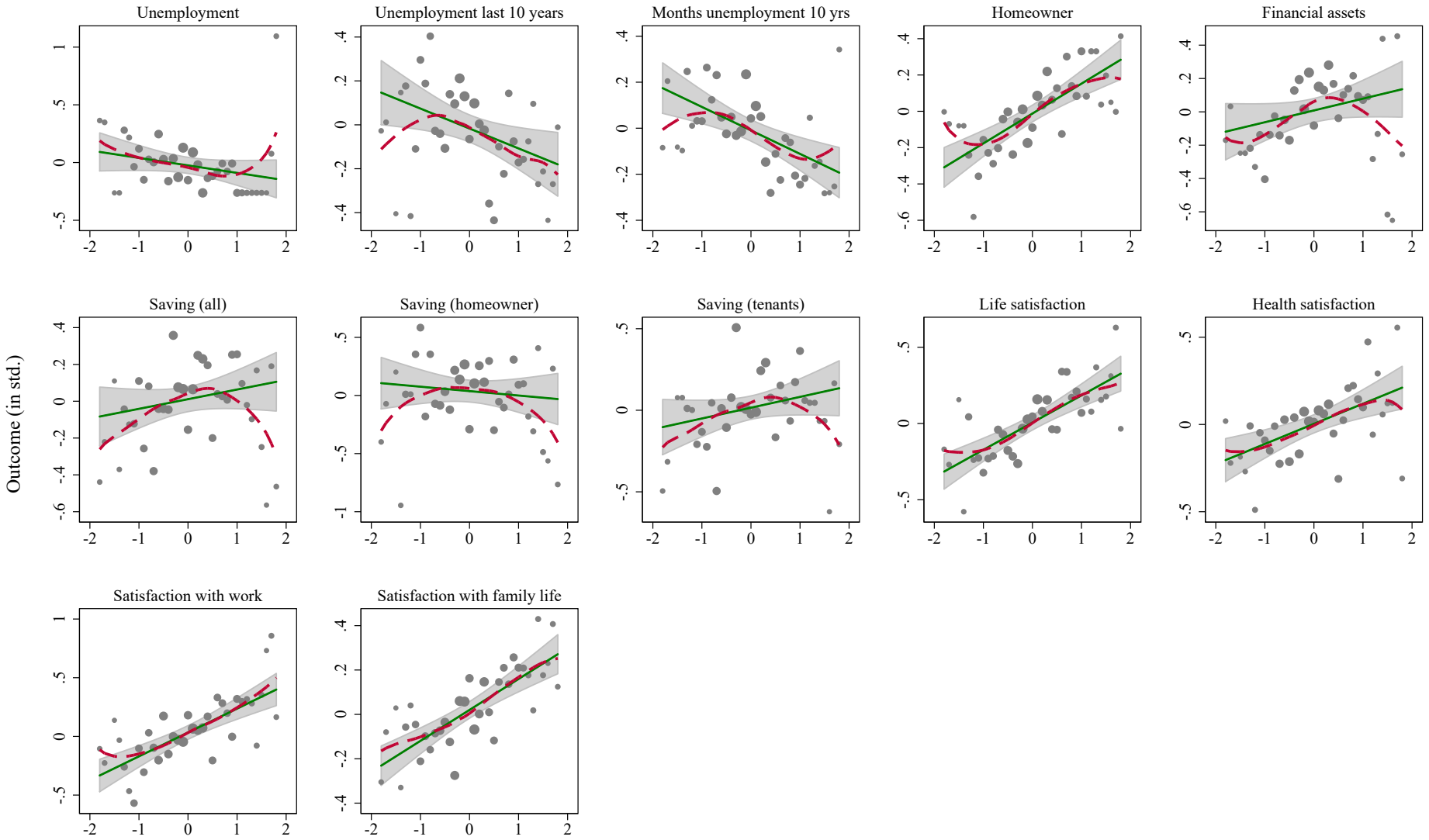

Figure B1: *cont.*

Notes: Own illustration based on SOEP–IS, wave 2017. Outcomes are standardized to mean 0 and std. 1. The dark gray markers represent average outcome values on the y-axis in each 0.1 std. self-control bin on the x-axis. The relative marker size indicates the number of observations summarized by the marker. The solid green line depicts linear fits and their 95 percent confidence band (in light gray). The dashed red line presents LOWESS (Locally Weighted Scatterplot Smoothing) fitted values with bandwidth 0.8. The non-parametric fit is nearly always within the confidence band of the linear fit, suggesting that the linear fit is a good approximation of the relation between self-control and life outcomes.

Online Appendix C Intergenerational Implications

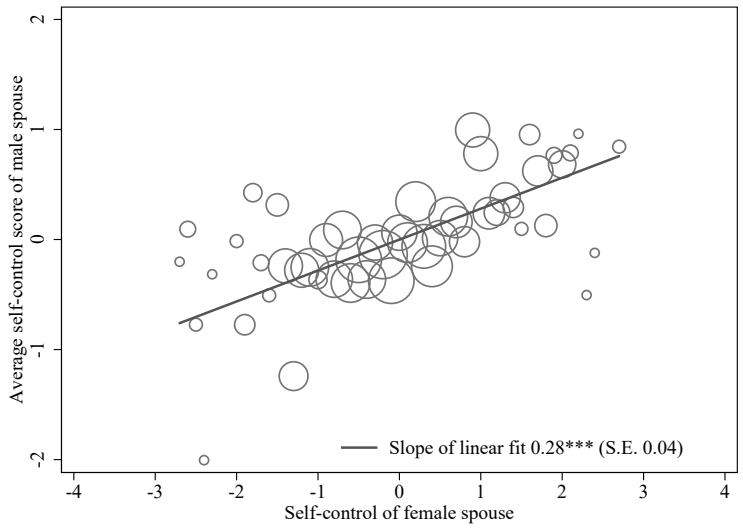

Figure C1: Correlation of self-control between partners

Notes: Own illustration based on SOEP–IS, wave 2017. Observations: 523 couples. Female self-control on the x-axis is standardized to mean 0 and standard deviation 1. The y-axis states the average self-control of the male spouse, again standardized, per 0.1-bin of female self-control. The size of the markers indicates the relative number of observations in the female self-control bin. Five of the 523 couples are same-sex relationships: in this case the self-control of the younger partner is stated in the x-axis. The linear fit is calculated using OLS regression and statistical significance is reported as: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

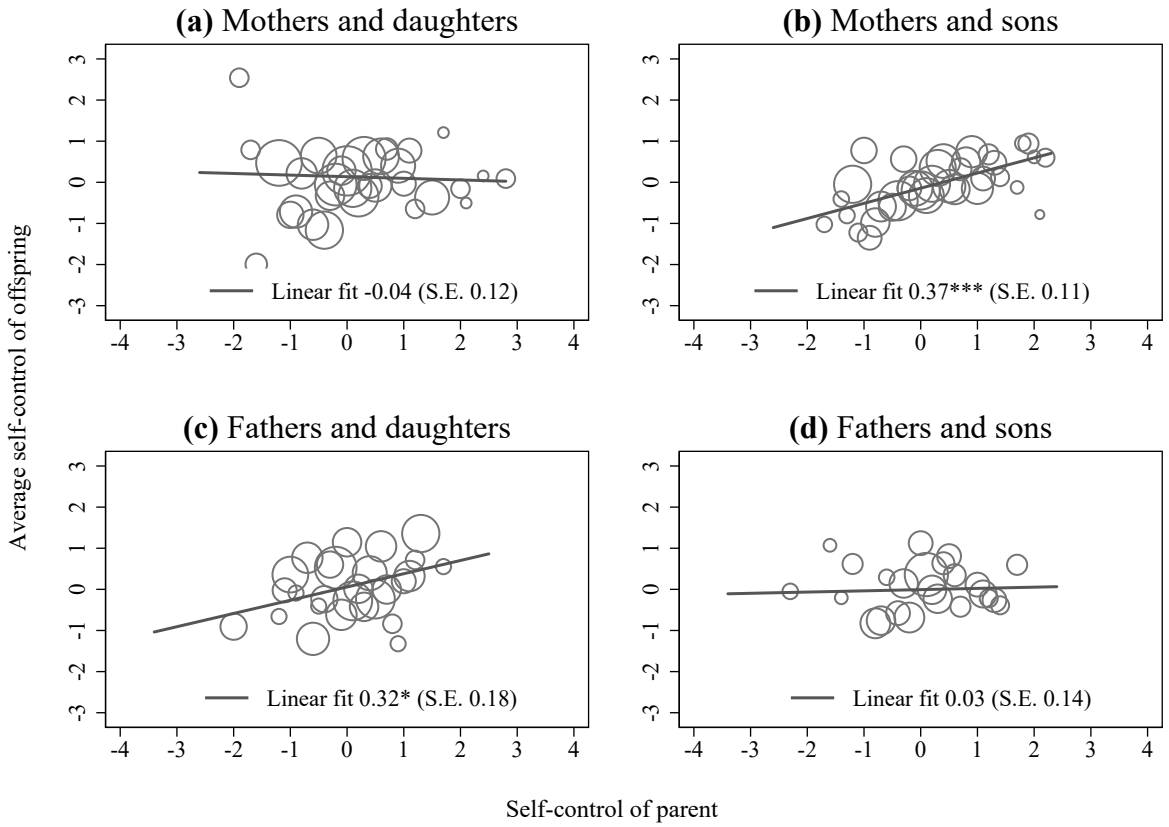

Figure C2: Intergenerational transmission of self-control scores between parents and their adult offspring

Notes: Own illustration based on SOEP–IS, wave 2017. The number of mother-daughter observations in panel (a) is 88, mother-son observations in panel (b) 85, father-daughter observations in panel (c) 64, and father-son observations in panel (d) 62. Parental self-control on the x-axis is standardized to mean 0 and standard deviation 1. The y-axis states the average self-control of the offspring, again standardized, per 0.1-bin of parental self-control. The size of the markers (within and across panels) indicates the relative number of observations in the parental self-control bin. The linear fit is calculated through OLS regression and significance is stated as: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

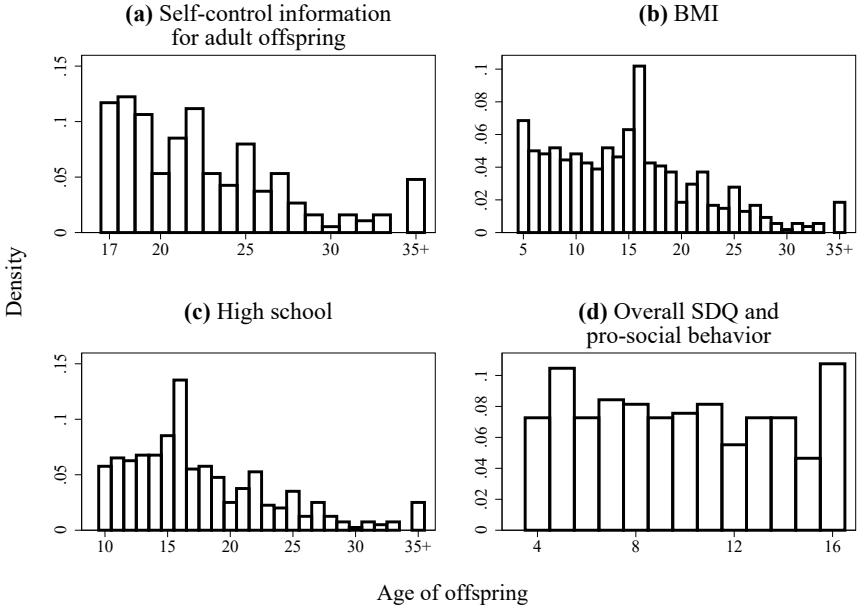

Figure C3: Offspring's ages at which we observe outcome variables

Notes: Own illustration based on SOEP–IS, wave 2017. See Table 7 for the number of observations. The age of the offspring (on the x-axis) refers to the year in which the information is assessed. The SDQ is only assessed for children up to age 16. The category 35+ summarizes ages 35–55. Self-control information on offspring is only available if offspring enter the panel as target individuals (with full questionnaires) at age 17. BMI information for children below age 5 is dropped. Whether children go to (academic) high school or another secondary school track is decided at age 10. SDQ information is assessed by the child's mother and only used for children age 4 or older due to the nature of the questions.

Table C1: Parental self-control and offspring's outcomes, by level of self-control of the parent

	(1)	(2)
	Coefficient of self-control of the parent with the:	
	higher self-control	lower self-control
Baseline specification		
Log(BMI)	−0.008	−0.005
High school	0.014	0.013
Overall SDQ	−0.273***	−0.254***
SDQ: pro-social	0.098*	0.116**
+parental personality traits		
Log(BMI)	0.001	0.005
High school	0.041	0.045
Overall SDQ	−0.144*	−0.122
SDQ: pro-social	−0.059	−0.032
+endogenous controls for parent		
Log(BMI)	0.000	−0.001
High school	0.009	0.039
Overall SDQ	−0.205**	−0.162*
SDQ: pro-social	0.002	0.056

Notes: Own calculations based on SOEP–IS, wave 2017. Each cell gives the coefficient of parental self-control for the offspring's outcomes stated on the left, based on a separate regression. In column 1, the self-control score of the parent with the higher self-control is used. In column 2, we use the self-control score of the parent with lower self-control. Observations: 539 for body mass index (BMI), 398 for high school, and 344 for the Strengths and Difficulties Questionnaire (SDQ) scores and pro-social behavior. Specifications are as in Table 7. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C2: Parental self-control and offspring's outcomes, by gender

	(1)	(2)	(3)	(4)	(5)	(6)
	Coefficient of self-control of the:					
	mother on:			father on:		
	all	daughters	sons	all	daughters	sons
Baseline specification						
Log(BMI)	−0.010	−0.036**	0.005	−0.008	0.003	−0.036**
High school	0.024	−0.021	0.021	−0.003	0.016	−0.025
Overall SDQ	−0.258***	−0.242**	−0.250***	−0.128*	−0.137	−0.090
SDQ: pro-social	0.147**	0.319***	0.089	0.089	0.158	0.146
+parental personality traits						
Log(BMI)	0.000	−0.015	0.017	0.002	0.023	−0.039*
High school	0.061*	0.010	0.091*	−0.043	−0.124	−0.085
Overall SDQ	−0.172**	−0.074	−0.284**	−0.019	0.055	−0.022
SDQ: pro-social	−0.044	0.139	0.039	0.003	0.033	−0.008
+endogenous controls for parent(s)						
Log(BMI)	−0.001	−0.016	0.015	0.001	−0.006	−0.023
High school	0.026	−0.032	0.042	−0.007	−0.033	−0.222
Overall SDQ	−0.151	0.152	−0.171	−0.152	0.199	−0.114
SDQ: pro-social	−0.023	0.020	0.218	0.013	−0.061	0.117

Notes: Own calculations based on SOEP–IS, wave 2017. Each cell gives the coefficient of parental self-control for the offspring's outcomes stated on the left, based on a separate regression. Observations: 501 for body mass index (BMI), 371 for high school, and 322 for the Strengths and Difficulties Questionnaire (SDQ) scores and pro-social behavior in column 1 (mother–offspring pairs); 226, 168, and 148 in column 2 (mother–daughter pairs); 275, 203, and 174 in column 3 (mother–son pairs); 350, 249, and 227 in column 4 (father–offspring pairs); 168, 121, and 115 in column 5 (father–daughter pairs); 182, 128, and 112 in column 6 (father–son pairs). Specifications are as in Table 7. Stars attached to the coefficients summarize the level of statistical significance according to the unadjusted standard errors with * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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