SUPPLEMENTAL INFORMATION

Self-Control, Health, Wealth, and Public Safety

Dunedin Study Sample

Participants are members of the Dunedin Multidisciplinary Health and Development Study, a longitudinal investigation of health and behavior in a complete birth cohort. Study members (N=1,037; 91% of eligible births; 52% male) were all individuals born between April 1972 and March 1973 in Dunedin, New Zealand, who were eligible for the longitudinal study based on residence in the province at age 3 and who participated in the first follow-up assessment at age 3. The cohort represents the full range of socioeconomic status in the general population of New Zealand's South Island and is primarily white. Assessments have been carried out at ages 3, 5, 7, 9, 11, 13, 15, 18, 21, 26 and 32 years; in 2004-2005 96% of the 1015 Study members still alive were assessed. Formal analyses undertaken reveal that cohort members with missing data do not differ significantly from those with present data on childhood self-control measures or outcomes reported here (1). At each assessment wave, Study members are brought to the Dunedin research unit for a full day of interviews and examinations. These data are supplemented by searches of official records and by questionnaires that are mailed, as developmentally appropriate, to parents, teachers, and peers nominated by the Study members themselves. The Otago Ethics Committee approved each phase of the study.

Childhood Self-control, Social Class, and IQ

Children's self-control during their first decade of life was measured using a multi-occasion/multi-informant strategy. This article reports a composite measure of

overall self-control that we have described in a previous publication (2). Briefly, the nine measures of childhood self-control in the composite include observational ratings of children's lack of control, parent and teacher reports of impulsive aggression, and parent, teacher, and self reports of hyperactivity, lack of persistence, inattention, and impulsivity. At ages 3 and 5, each study child participated in a testing session involving cognitive and motor tasks. The children were tested by examiners who had no knowledge of their behavioral history. Following the testing, each examiner rated the child's lack of control in the testing session (3). At ages 5, 7, 9, and 11, parents and teachers completed the Rutter Child Scale (RCS)(4), which included items indexing impulsive aggression and hyperactivity. At ages 9 and 11, the RCS was supplemented with additional questions about the children's lack of persistence, inattention, and impulsivity (5). At age 11, children were interviewed by a psychiatrist and reported about their symptoms of hyperactivity, inattention, and impulsivity (6).

Measure	Age(s) assessed	Source	Item content
Lack of control	3, 5	Observer	Labile, low frustration tolerance, lack of reserve, resistance, restless, impulsive, requires attention, brief attention to task, lacks persistence in reaching goals
Impulsive aggression	5, 7, 9, 11	Parent, teacher	Flies off handle, fights
Hyperactivity	5, 7, 9, 11	Parent, teacher	Runs and jumps about, cannot settle, has short attention span
Hyperactivity	9, 11 (additional items)	Parent, teacher	"On the go" as if "driven by a motor", difficulty sitting Still
Lack of persistence	9, 11	Parent, teacher	Fails to finish tasks, easily distracted, difficulty sticking to activity
Impulsivity	9, 11	Parent, teacher	Acts before thinking, has difficulty awaiting turn, shifts excessively between activities
Hyperactivity	11	Self	Fidgety, restless
Inattention	11	Self	Difficulty paying attention, trouble sticking to a task
Impulsivity	11	Self	Difficulty waiting turn, talking while others are still talking

The 9 measures of self-control in childhood were all similarly positively and significantly correlated. Based on principal components analysis, the standardized

components were averaged into a single composite score (M=0, SD=1) with excellent internal reliability α = .86 (2); the first component in a principal component analysis accounted for 51% of the variance. (All analyses were repeated with and without "impulsive aggression" in the scale; findings were unaltered.)

The childhood measure of self-control was related to self-control measured in young adulthood, at age 26. Self-control in young adulthood was measured via informant- and self-reports, combined in a single factor: the Conscientiousness scale of the Big Five Personality Inventory (BFI) was mailed to people nominated by each Study member as knowing him/her well (informants included friends, partners, and family members) and the Self-Control scale of the Multidimensional Personality Questionnaire (MPQ) which was completed by the Study members (7). The results showed that children in the low end of the distribution of childhood self-control were rated, in adulthood, as lowest on self-control whereas children in the high end of the distribution of childhood self-control were rated, in adulthood, as highest on self-control. Looking at the sample divided into quintiles on childhood self-control, the means on adult self-control (sample M=0, SD=1) were -.36, -.12, .01, .17, and .24 ($F=18.96$, $P<.001$), r = .30, $P<.001$.

Children's social class origins (i.e., their parents' social class) was measured on a scale that places occupations into one of six categories (1=professional, 6=unskilled laborer) based on education and income associated with that occupation in data from the New Zealand census (8). The higher of either parent's occupation was averaged across the assessments from birth to age 11.

Children's IQ was assessed at ages 7, 9, and 11 years by the Wechsler Intelligence Scale for Children – Revised (WISC-R)(9). IQ scores for the three ages were averaged and standardized.

Adolescent Snares

We assessed three adolescent snares, defined as risky behavioral choices that may mediate the effects of childhood self-control on adult health and wealth outcomes.

Early tobacco use. Study members were interviewed about their tobacco use throughout their adolescence. We defined early tobacco users as those Study members who smoked by age 15 years (32% of Study members).

No educational qualification. 19% of Study members left secondary school early without any qualifications.

Teenaged parenthood. 6% of Study members experienced an unplanned baby born before their 21st birthday.

We summed these three snares for each Study member; 58% of the Study members encountered no snares, 30% had one snare, 10% had 2 snares, and 2% all three snares.

Adult Health Outcomes

Psychiatric and physical examinations (blood drawn always between 4:15-4:45 pm) were conducted at age 32: 92% of the Study members (N=892) provided blood samples. Pregnant women were excluded from the reported analyses.

Physical health was indexed by 5 clinical measures of poor adult health, including clustering of metabolic abnormalities, airflow obstruction (poor respiratory

health), periodontal disease, sexually transmitted infection, and elevated inflammation level.

Clustering of metabolic abnormalities was assessed by measuring (i) overweight, (ii) high blood pressure, (iii) high total cholesterol, (iv) low high-density cholesterol, (v) high glycated hemoglobin, and (vi) poor cardiovascular fitness (VO_2max, maximum oxygen consumption adjusted for body weight was assessed by measuring heart rate in response to a submaximal exercise test on a friction-braked cycle ergometer). As previously described (10), the number of biomarkers on which each Study member was at risk was summed, and Study members who had at least three risk factors were defined as having "clustered" metabolic risk, 17%.

Respiratory function was assessed using a computerized spirometer and body plethysmograph. Measurements of vital capacity were repeated to obtain at least three repeatable values (within 5%) followed by full-forced expiratory maneuvers to record the forced expiratory volume in 1s (FEV_1). The post-bronchodilator FEV_1/FVC ratio is reported as the primary lung function measure because it is the most sensitive measure for assessing airway remodeling in a large cohort (11). Study members with an FEV_1/FVC ratio below .70 were classified as having significant airflow limitation (12), 4%.

Periodontal disease. Examinations were conducted in all 4 quadrants using calibrated dental examiners; three sites (mesiobuccal, buccal, and distolingual) per tooth were examined, and gingival recession (the distance in millimeters from the cementoenamel junction to the gingival margin) and probing depth (the distance from the probe tip to the gingival margin) were recorded using a National Institute of Dental Research probe. Periodontal measurements were not conducted on those reporting a

history of cardiac valvular anomalies or rheumatic fever (15 individuals). The combined attachment loss (CAL) for each site was computed by summing gingival recession and probing depth (third molars were not included). We report the presence of periodontal disease, defined as 2 sites with 4 or more mm of combined attachment loss, 20%.

Sexually transmitted infection. Serology for herpes simplex virus type 2 infection was performed using an indirect enzyme-linked immunosorbent assay (HerpeSelect 2 ELISA IgG; Focus Technologies, Cypress, Calif) (13). Herpes simplex virus type 2 infection was diagnosed using a cutoff value of 3.5, and any equivocal result (from 0.9 to 3.5) was resolved using herpesvirus 2 Western blot analysis, 18%.

Elevation in inflammation was assessed by assaying high-sensitivity C-Reactive Protein (hsCRP, mg/L). High-sensitivity C-reactive protein level is thought to be one of the most reliable measured indicators of vascular inflammation and has been recently endorsed as an adjunct to traditional risk factor screening for cardiovascular risk. hsCRP was measured on a Hitachi 917 analyzer (Roche Diagnostics, GmbH, D-68298, Mannheim, Germany) using a particle enhanced immunoturbidimetric assay. The CDC/AHA definition of high cardiovascular risk (hsCRP >3 mg/L) was adopted to identify our risk group (14), 20%.

Substance dependence. Substance-use disorders during the past year at age 32 were assessed in private structured interviews using the Diagnostic Interview Schedule (15), and diagnosed according to DSM-IV criteria (16). We assessed tobacco dependence, alcohol dependence, cannabis dependence, and dependence on other drugs. Dependence at age 32 signals a substance problem serious enough to outlast early adulthood, a developmental period when large numbers of young people can meet

criteria for substance disorder on a short-term basis. We summed the number of substances on which each Study member was dependent; 73% of the Study members were free of substance dependence, 20% were dependent on one substance, and 7% on two or more substances.

Informant-rated substance problems were measured by mailing a brief questionnaire to people nominated by the Study member as knowing him/her well (informants included friends, partners, and family members). Full details of the Dunedin Study informant rating system are provided elsewhere (17). Information from informants was available for 96% of Study members seen at age 32. Informants rated the study member on two items ("has alcohol problems," "has marijuana or other drug problems" using a 3-point scale (0=not a problem, 1=bit of a problem, 2=yes, a problem). Items were summed for the final score, Mean=0.13, SD=0.30.

Depression. Study members were interviewed by health professionals using the Diagnostic Interview Schedule (15). Depression was diagnosed using the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (16). Study members were classified as depressed if they experienced recurrent episodes of depression in adulthood, from age 18-32 years, 17%.

Adult Wealth Outcomes

Adult socioeconomic index. The New Zealand Socio-Economic Index (NZSEI) (18) is an occupationally derived measure of socio-economic status (SES) developed using data from the 1996 New Zealand Census. Consistent with the International Socio-economic index (19), scores for each of the occupations listed in the New Zealand Standard Classification of Occupations are scaled from 10 (the lowest) to 90 (the

highest). The range in the Dunedin sample is 10 (e.g., launderer) to 89 (e.g., anaesthesiologist). The sample had a mean SES of 41.5 (SD = 16.5).

Income. Following the census (20), Study members were asked to list their sources of income and given the choice of 13 different income categories to report their total pre-tax annual income from all sources. Income averaged $42,694 (SD = 25,817).

Single-parent child-rearing. With the aid of the Life History Calendar (21), we obtained details about whether and when each Study member had children and with whom these children were living.

In private interviews with each Study member, we assessed their financial planfulness and financial struggles.

Financial planfulness was indexed by two scales:

Saving behavior. Study members' attitudes toward saving and saving behaviors were assessed with six questions: "Is saving for the future important to you?", "Do you save money to buy expensive items by putting money away and not touching it?", "Do you make regular savings into a special bank account?", "Do you think that saving money makes people more independent?", "Are you often puzzled by where your money goes?", "Do you think it is important to live within your budget?"(22). Responses (0=no, 1=yes) were summed to form a scale, Mean=4.1, SD=1.3.

Financial building blocks. Study members were asked if they were home owners, had investments such as stocks or business investments, and if they had a retirement plan. We counted the number of building blocks for each Study member, Mean = 1.3, SD = 1.0.

The final “Financial Planfulness” measure was computed by standardizing the Saving Behavior and Financial Building Blocks scales and averaging.

Financial struggles were indexed by two scales:

Money-management difficulties. Study members were asked, “Since you were 26, did you ever find it difficult to meet the cost of”…. “food and other necessities,” “your rent, mortgage, or contribution for keep,” “bills for things like insurance, phone or heating,” “having a night out or presents for the family,” “holidays or travel,” “major repairs to your house or car,” and “do you find yourself living from paycheck to paycheck.” Responses were summed to form a scale, Mean=4.0, SD=4.3.

Credit problems. Study members were asked, “Since you were 26, have you”….. “been turned down for a credit card,” “defaulted on a credit card payment,” “missed a bill, mortgage, or loan payment,” “sold an asset to pay a bill,” “sold any of your belongings to a pawnbroker,” “been declared bankrupt?” We counted the number of credit problems for each Study member, Mean=0.6, SD=0.9.

The final “Financial Struggles” measure was computed by standardizing the Money Management Difficulties and Credit Problems scales and averaging.

Informant-rated financial problems were measured by mailing a brief questionnaire to people nominated by the Study member as knowing him/her well, as described earlier. Informants rated the Study member on two items (“poor money manager,” “lacks enough money to make ends meet”) using a 3-point scale (0=not a problem, 1=bit of a problem, 2=yes, a problem), Mean=0.7, SD=0.9, Range: 0-4.

Crime Outcomes

Criminal convictions between ages 17 and 32 were measured by searching the computerized New Zealand Police database. Computerized records covered all courts in Australia, New Zealand, and surrounding islands. Convictions included *property* (e.g., theft of property of value greater than $500, receipt of stolen property, burglary, breaking and entering, shoplifting, credit car theft), c*ourt-order violations* (e.g., obstructing or resisting police, breaching parole, escaping prison, misleading welfare officer, failing to pay fines, failing to answer summons), *drugs* (e.g., possessing drug paraphernalia, supplying or procuring hard drugs or prescription medications, selling cannabis), *violence* (e.g., aggravated cruelty to animal, common assault, assault with intent to injure with weapon, assault of police officer, robbery, robbery aggravated with firearm, manslaughter, rape, common assault domestic). 24% of the sample had at least one conviction.

Statistical analysis

First, we tested the bivariate associations between childhood self-control and adult outcomes, in the full cohort (with sex as a covariate) as well as for males and females separately. Second, we tested the associations between childhood self-control and adult outcomes controlling for childhood social origins and childhood IQ as covariates (as well as sex), in a regression of the form:

$$A = a + b_1SC + b_2SES + b_3IQ + e,$$

where A is an adult health or wealth measure, SC is childhood self-control, SES is childhood socioeconomic status, IQ is childhood intelligence quotient, and e is an error term. The form of regression varied depending on whether the outcome under consideration represented binary, count, or continuous data. Logistic regression models

were utilized to model odds ratios (OR with 95% confidence intervals) when analyzing binary adult outcomes (i.e., depression, conviction); poisson regressions were used to model incident-rate ratios (IRR with 95% confidence intervals) when analyzing count data that were not overdispersed (i.e., number of health problems); negative binomial regressions were utilized to model incidence-rate ratios (IRR with 95% confidence intervals) when analyzing count data that were overdispersed (e.g., substance dependence); and, ordinary least squares regression models were used to estimate coefficients (B with standard errors) predicting continuously-distributed scales (i.e., socioeconomic status, income, financial planfulness, financial struggles). Third, we tested whether childhood self-control is associated with poor adult outcomes because children with poor self-control make mistakes and bad choices as adolescents (i.e., the snare hypothesis) or whether childhood self-control is independently associated with poor adult outcomes. We tested this by comparing self-control coefficients on adult outcomes (a) before partialling out the effect of adolescent snares; (b) after partialling out the effect of adolescent snares; and (c) by estimating the association between childhood self-control and adult outcomes among the “utopian” group of Study members who did not encounter any adolescent snares.

Sample for sibling-comparison analysis

Participants were members of the Environmental Risk (E-Risk) Longitudinal Twin Study, which tracks the development of a nationally representative birth cohort of 2,232 British children. The sample was drawn from a larger birth register of twins born in England and Wales in 1994-1995 (23). Details about the sample have been reported previously (24). Briefly, the E-risk sample was constructed in 1999-2000, when 1,116

families with same-sex 5-year old twins (93% of those eligible; 49% male) participated in home-visit assessments. Families were recruited to represent the UK population of families with newborns in the 1990s, based on (a) residential location throughout England and Wales and (b) mother's age (i.e., older mothers having twins via assisted reproduction were under-selected and teenage mothers with twins were over-selected). We used this sampling (a) to replace high-risk families who were selectively lost to the register via nonresponse and (b) to ensure sufficient numbers of children growing up in high-risk environments. Follow-up home visits were conducted when the children were aged 7 years (98% participation), 10 years (96% participation), and, most recently, 12 years (96% participation). We applied sibling fixed-effects models to the dizygotic pairs (N= 509 pairs), because they are no more alike than ordinary siblings (with the added advantage of being the same age and sex). Parents gave informed consent and children gave assent. The Joint South London and Maudsley and the Institute of Psychiatry NHS Ethics Committee approved each phase of the study.

Childhood self-control at age 5 years

After completing the age-5 home visit, examiners rated each twin on the measure of self-control that was originally used in the Dunedin Study when the children in that study were age 3 and 5 years (3). In this assessment procedure, the examiners evaluated the following behaviors: lability, low frustration tolerance, hostility, resistance, restlessness, impulsivity, requires attention, fleeting attention, and lacking persistence. Each behavioral characteristic was defined in explicit terms, and the examiner evaluated whether each characteristic was (0) not at all, (1) somewhat, or (2) definitely characteristic of the child. The (inter-rater) reliability was = .79.

Behavioral characteristic	Age assessed	Source	Description
Labile	5	Observer	Instability of emotional responses, overreactivity to external situations and to stimuli.
Low frustration tolerance	5	Observer	Refusal to continue or attempt tasks that appear difficult
Lack of reserve	5	Observer	Assertive, rough, aggressive behavior that is lacking in reserve.
Resistance	5	Observer	Resistance to directions or to demands of the situation and the examiner.
Restlessness	5	Observer	Extreme overactivity, inability to sit still, constantly in motion.
Impulsivity	5	Observer	Explosive, uncontrolled behavior.
Requires attention	5	Observer	Constant need for attention or help.
Fleeting attention	5	Observer	Lack of concentration, brief attention to tasks.
Lacking persistence	5	Observer	Little effort to reach a goal, inability to keep goal or question in mind.

Children's outcomes at age 12 years

Children reported about their delinquent behavior using a self-administered protocol on a laptop computer with headphones, designed to preserve the child's privacy and insure that low reading level did not affect responses. Questions were specifically selected to map onto DSM-IV (16) criteria for conduct disorder (e.g., Have you damaged a parked car? Have you hurt someone just for the fun of it? Have you stolen something while nobody was looking?).

Children reported about smoking in the same computer administered protocol, in response to the question: Have you tried smoking a cigarette? (No = 0, Yes - only once or twice = 1; Yes - more than twice = 2).

Children's educational performance was evaluated by their teachers, who rated each child's performance in English and Math in relation to his or her peers using a seven-point scale, ranging from (1) much less to (7) much more compared with other children in the classroom.

Children's IQ was assessed by the Wechsler Intelligence Scale for Children – IV (25)

Statistical analysis

The sibling fixed effects model captures within-family differences by controlling for unobserved family-level variables (26-28). This is accomplished by differencing estimates across siblings so that the effect of unobserved family-level factors is reduced. More completely, in Equation (1),

$$Y_{ik} = \alpha + \beta SC_{ik} + F_i + \varepsilon_{ik} \quad (1)$$

Y_{ik} represents the outcome of interest (i.e., antisocial behavior, school performance, or smoking) for twin *k* in family *i*, SC represents self-control for twin *k* in family *i*, and the traditional error term is broken into two components:

(a) F_i, represents unmeasured family-level effects for family *i*, and

(b) ε_{ik}, represents error specific to twin *k* in family *i*

Implementing the sibling fixed effects model involves taking averages across siblings and subtracting them from Equation (1). The family fixed effect model then becomes:

$$(Y_{ik} - Y_{.k}) = \beta(SC_{ik} - SC_{.k}) + \gamma(F_i - F_{.k}) + (\varepsilon_{ik} - \varepsilon_{.k}) \quad (2)$$

where $Y_{.k}$, $SC_{.k}$, $F_{.k}$ and $\varepsilon_{.k}$ are sibling averages for Y, SC, F, and ε, respectively. Given that F is constant within a family, $\gamma(F_k - F_{.k})$ equals zero, leaving only the sibling-varying self-control effect (SC_{ik}). β then provides an unbiased estimate of the effect of self-control on Y (i.e., school performance, antisocial behavior, or smoking). We repeated all analyses with sibling differences in IQ as an additional covariate.

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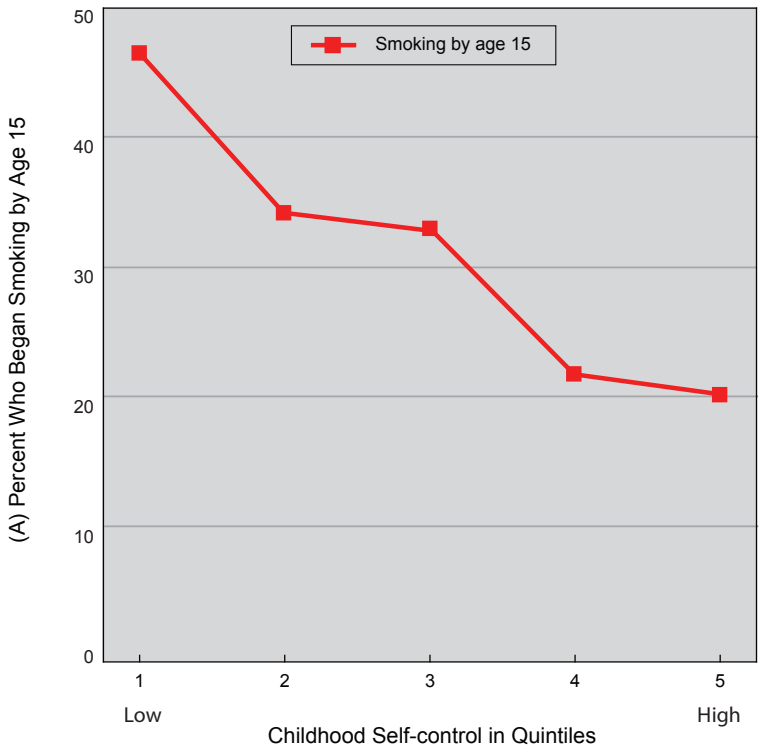
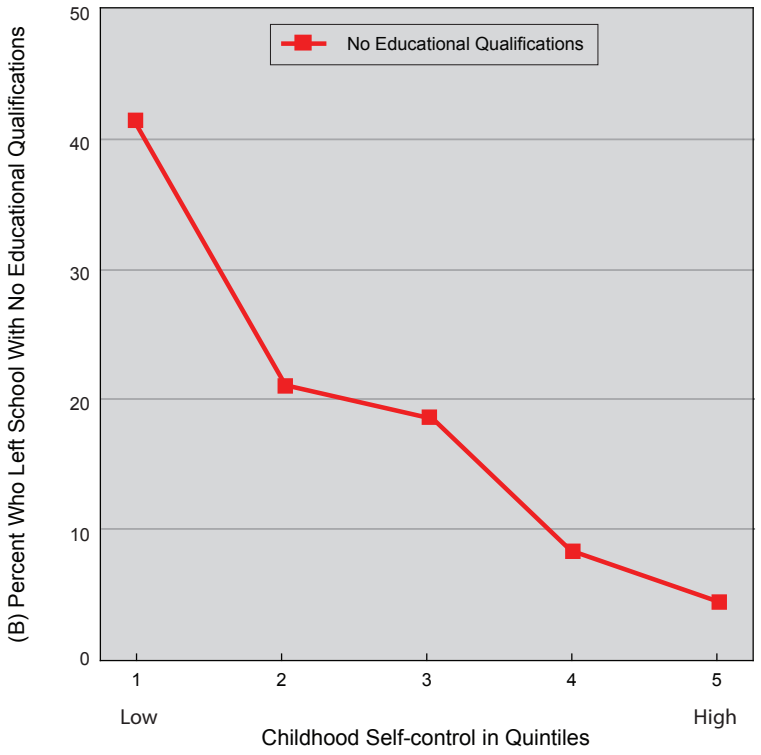
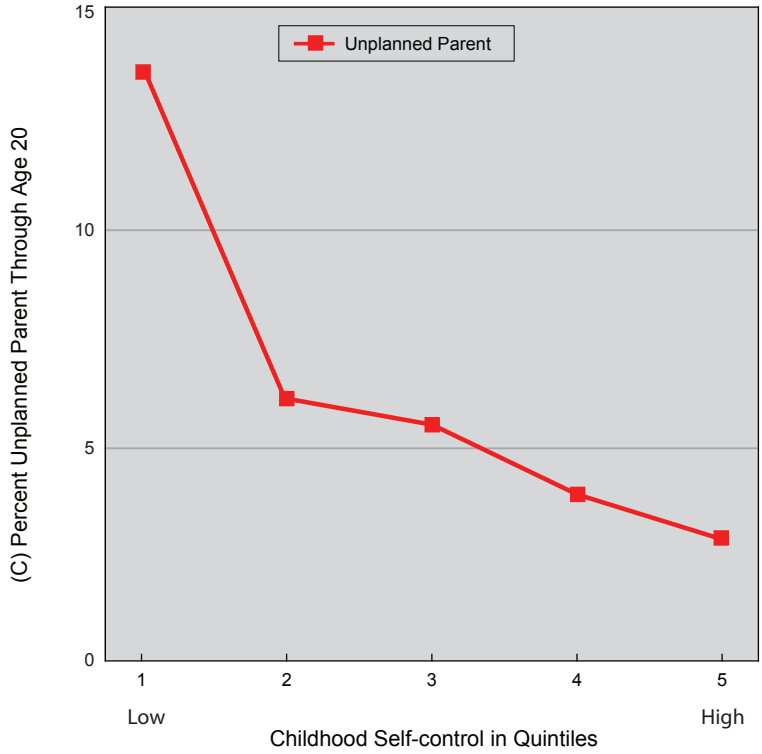
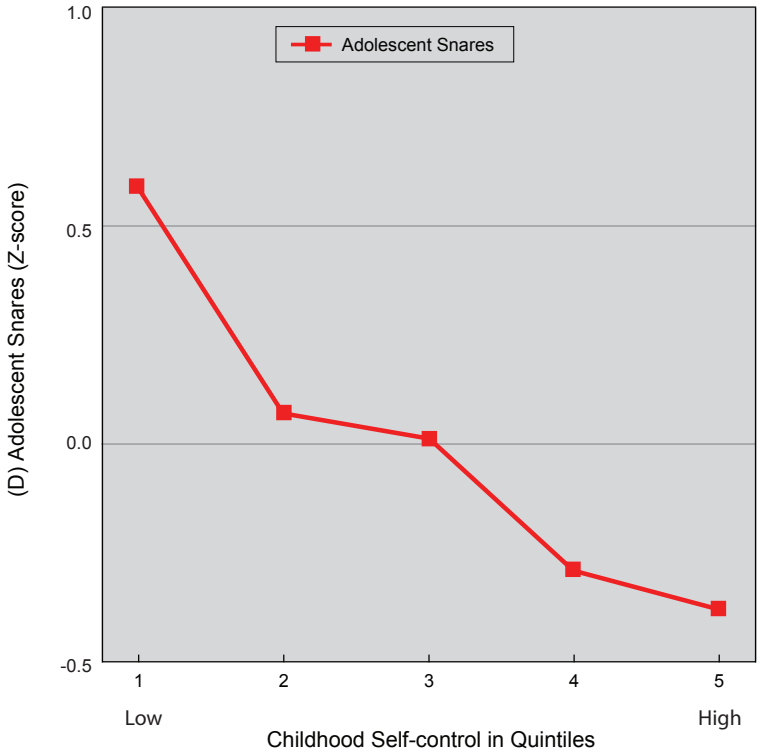
Supplemental Figure 1. Self-control gradient: Children with low self-control were more likely to begin smoking by age 15 (Panel A), **leave school with no educational qualifications** (Panel B), and **become unplanned parents through age 20** (Panel C) **than those with high self-control. Panel D shows the self-control gradient for the composite measure of these three adolescent snares.**









Supplemental Table 1. Does poor self-control in childhood lead to poor health, wealth-related problems, and criminal convictions in adulthood? The table shows the association between childhood self-control and each of the outcome variables (shaded) and their components (not shaded), for the full sample (in blue), for females, and for males. The sex differences column shows whether the association between self-control and the outcome differed between females and males. If the test of sex differences in association fell below p<.10, we report the exact p value.

Adult outcomes and predictors:	Full Sample			Sex differences? Yes/No	Females			Males		
Health	Coefficient	95% CI/SE	P		Coefficient	95% CI/SE	P	Coefficient	95% CI/SE	P
Physical Health Index (0 - 5) [a]	1.196	1.113-1.285	<.001	No	1.179	1.047-1.329	.007	1.205	1.101-1.320	<.001
Clustering of metabolic abnormalities [b]	1.332	1.120-1.584	.001	No	1.404	1.037-1.903	.028	1.299	1.052-1.603	.015
Poor respiratory function [b]	1.170	.851-1.608	.335	No	.865	.393-1.904	.719	1.259	.887-1.786	.198
Periodontal disease [b]	1.294	1.100-1.523	.002	No	1.464	1.102-1.946	.009	1.221	1.003-1.488	.047
Sexually transmitted infection [b]	1.194	1.001-1.424	.049	No	1.156	.879-1.521	.298	1.222	.970-1.538	.089
Clinically elevated inflammation levels [b]	1.237	1.039-1.473	.017	No	1.220	.937-1.588	.140	1.250	.991-1.578	.060
Recurrent Depression [b]	1.187	.994-1.419	.059	No	1.222	.945-1.580	.127	1.071	.845-1.359	.570
Substance Dependence Index (0-4) [a]	1.299	1.156-1.460	<.001	No	1.358	1.109-1.663	.003	1.274	1.104-1.407	<.001
Tobacco dependence [b]	1.437	1.228-1.682	<.001	No	1.359	1.044-1.770	.023	1.482	1.217-1.805	<.001
Alcohol dependence [b]	1.116	.888-1.404	.346	No	.932	.547-1.587	.794	1.170	.906-1.510	.228
Marijuana dependence [b]	1.233	.954-1.594	.109	P = .051	2.045	1.185-3.528	.101	1.106	.829-1.477	.492
Dependence on Other Illicit Drugs [b]	1.582	1.189-2.104	.002	No	2.239	1.340-3.741	.002	1.386	.985-1.950	.061
Informant-reported Substance Problems [c]	.178	.035	<.001	No	.108	.045	.020	.208	.050	<.001
Wealth										
Socioeconomic Status [c]	-.263	.035	<.001	No	-.161	.062	.001	-.310	.042	<.001
Income [c]	-.238	.034	<.001	No	-.199	.058	<.001	-.262	.042	<.001
Single-parent Child-rearing [b,d]	1.633	1.304-2.046	<.001	No	1.647	1.175-2.308	.004	1.622	1.199-2.195	.002
Financial Planfulness [c]	-.195	.034	<.001	No	-.178	.056	<.001	-.197	.044	<.001
Saving behaviors [c]	-.139	.035	<.001	No	-.148	.057	.001	-.126	.044	.005
Financial building blocks [c]	-.162	.035	<.001	No	-.118	.056	.010	-.183	.044	<.001
Financial Struggles [c]	.152	.035	<.001	No	.176	.057	<.001	.128	.044	.005
Money management difficulties [c]	.137	.034	<.001	P = .019	.187	.062	<.001	.096	.040	.034
Credit problems [c]	.115	.035	<.001	No	.097	.054	.035	.121	.046	.008
Informant-reported Financial Problems [c]	.274	.034	<.001	No	.280	.053	<.001	.257	.046	<.001
Public Safety										
Criminal Conviction [b]	1.830	1.559-2.148	<.001	No	1.693	1.248-2.297	<.001	1.886	1.558-2.283	<.001

[a] IRR, [b] OR, [c] Standardized OLS regression coefficient, [d] This analysis is restricted to 47% of the Study members who have had a child.

Supplemental Table 2. Does the effect of low self-control operate throughout the self-control distribution or is it driven by the least (and most) self-controlled children?

	Model 1: Full Sample			**Model 2: After removing children in the lowest self-control quintile**			**Model 3: After removing children in the lowest and highest self-control quintiles**		
Adult outcomes and predictors:	Coeff	95% CI/SE	P	Coeff	95% CI/SE	P	Coeff	95% CI/SE	P
A: Health									
Physical Health Index (0-5) [a]									
Low Self-control	1.196	1.113-1.285	<.001	1.215	1.113-1.326	<.001	1.179	1.072-1.297	.001
Substance Dependence Index (0-4) [a]									
Low Self-control	1.299	1.156-1.460	<.001	1.317	1.147-1.514	<.001	1.284	1.102-1.496	.001
Informant-reported Substance Problems [b]									
Low Self-control	.178	.035	<.001	.112	.065	.002	.109	.097	.010
B: Wealth									
Socioeconomic Status [b]									
Low Self-control	-.263	.035	<.001	-.190	.076	<.001	-.148	.105	.001
Income [b]									
Low Self-control	-.238	.034	<.001	-.149	.074	<.001	-.119	.103	.004
Single Parent Child Rearing [c, d]									
Low Self-control	1.633	1.304-2.046	<.001	1.561	1.240-1.964	<.001	1.332	1.036-1.713	.026
Financial Planfulness [b]									
Low Self-control	-.195	.034	<.001	-.118	.071	.001	-.096	.099	.022
Financial Struggles [b]									
Low Self-control	.152	.035	<.001	.131	.070	<.001	.100	.102	.016
Informant-reported Financial Problems [b]									
Low Self-control	.274	.034	<.001	.203	.066	<.001	.202	.095	<.001
C: Public Safety									
Criminal Conviction [c]									
Low Self-control	1.830	1.559-2.148	<.001	1.566	1.292-1.899	<.001	1.373	1.126-1.674	.002

[a] IRR, [b] Standardized OLS regression coefficient, [c] OR, [d] This analysis is restricted to 47% of the Study members who have had a child.

Supplemental Table 3. Does increased self-control from childhood to young adulthood predict better health, more wealth, and less crime by age 32 years? Each child was assigned to one of five quintiles reflecting their childhood self-control score. To answer the question of whether there might be benefits associated from moving a child at a low quintile of self-control in childhood to a higher quintile, we cross-classified children's self-control scores (in quintiles) with their young-adult self-control scores (in quintiles) and constructed a scale ranging from -4 (decreasing self-control) to +4 (increasing self-control). The table shows the association between change in self-control (denoted as Δ self-control) and each of the age-32 outcomes, controlling for initial levels of childhood self-control.

Adult outcomes and predictors:	Coeff	95% CI/SE	P
Health			
Physical Health Index (0-5) [a]			
Low Self-control	1.161	1.081-1.247	<.001
Δ Self-control	.992	.938-1.050	.794
Substance Dependence Index (0-4) [a]			
Low Self-control	1.530	1.365-1.713	<.001
Δ Self-control	.763	.697-.836	<.001
Informant-reported Substance Problems [b]			
Low Self-control	.268	.030	<.001
Δ Self-control	-.213	.024	<.001
Wealth			
Socioeconomic Status [b]			
Low Self-control	-.308	.031	<.001
Δ Self-control	.090	.025	.031
Income [b]			
Low Self-control	-.285	.030	<.001
Δ Self-control	.090	.024	.027
Single Parent Child Rearing [c, d]			
Low Self-control	1.924	1.573-2.353	<.001
Δ Self-control	.686	.587-.802	<.001
Financial Planfulness [b]			
Low Self-control	-.428	.029	<.001
Δ Self-control	.380	.023	<.001
Financial Struggles [b]			
Low Self-control	.343	.030	<.001
Δ Self-control	-.278	.023	<.001
Informant-reported Financial Problems [b]			
Low Self-control	.428	.029	<.001
Δ Self-control	-.284	.023	<.001
Public Safety			
Criminal Conviction [c]			
Low Self-control	2.073	1.758-2.443	<.001
Δ Self-control	.714	.631-.809	<.001

[a] IRR, [b] Standardized OLS regression coefficient, [c] OR, [d] This analysis is restricted to 47% of the Study members who have had a child. Δ self-control = change in self-control rank.

Supplemental Table 4. Does poor self-control in childhood lead to poor health, wealth-realated problems and criminal convictions in adulthood independently of adolescent snares? Adolescent snares include smoking, school-leaving, and unplanned teen parenthood. Model 1 shows the association between childhood self-control and adolescent snares on adult outcomes. Model 2 shows the unique effects of childhood self-control on adult outcomes, controlling for adolescent snares (and of adolescent snares, controlling for childhood self-control). Model 3 shows the effects of childhood self-control on adult outcomes among adolescents who did not encounter any snares, a so-called "utopian" control group.

	Model 1: Independent Effects			Model 2: Statistical Control			Model 3: Utopian Control		
	Coeff	95% CI/SE	P	Coeff	95% CI/SE	P	Coeff	95% CI/SE	P
Health									
Physical Health Index (0-5) [a]									
Self-Control	1.196	1.113 - 1.285	<.001	1.136	1.049 - 1.230	.002	1.246	1.101 - 1.411	.001
Adolescent Snares	1.262	1.153 - 1.382	<.001	1.188	1.076 - 1.311	.001	--	--	--
Substance Dependence Index (0-4) [a]									
Self-Control	1.299	1.156 - 1.460	<.001	1.089	.962 - 1.232	.179	1.269	.994 - 1.622	.056
Adolescent Snares	1.800	1.576 - 2.055	<.001	1.730	1.497 - 1.999	<.001	--	--	--
Informant-Reported Substance Problems [c]									
Self-Control	.178	.035	<.001	.084	.036	.014	.066	.035	.124
Adolescent Snares	.309	.041	<.001	.281	.044	<.001	--	--	--
Wealth									
Socioeconomic Status [c]									
Self-Control	-.263	.035	<.001	-.175	.037	<.001	-.201	.055	<.001
Adolescent Snares	-.284	.043	<.001	-.224	.046	<.001	--	--	--
Income [c]									
Self-Control	-.238	.034	<.001	-.176	.036	<.001	-.176	.054	<.001
Adolescent Snares	-.221	.042	<.001	-.161	.045	<.001	--	--	--
Single Parent Child Rearing [b, d]									
Self-Control	1.633	1.304 - 2.046	<.001	1.258	.978 - 1.620	.074	1.323	.887 - 1.973	.170
Adolescent Snares	2.290	1.789 - 2.932	<.001	2.113	1.627 - 2.743	<.001	--	--	--
Financial Planfulness [c]									
Self-Control	-.195	.034	<.001	-.132	.037	<.001	-.158	.052	<.001
Adolescent Snares	-.224	.042	<.001	-.178	.044	<.001	--	--	--
Financial Struggles [c]									
Self-Control	.152	.035	<.001	.083	.037	.017	.117	.049	.007
Adolescent Snares	.233	.042	<.001	.205	.044	<.001	--	--	--
Informant-Reported Financial Problems [c]									
Self-Control	.274	.034	<.001	.200	.036	<.001	.174	.045	<.001
Adolescent Snares	.262	.042	<.001	.193	.045	<.001	--	--	--
Public Safety									
Criminal Conviction [b]									
Self-Control	1.830	1.559 - 2.148	<.001	1.457	1.218 - 1.743	<.001	1.701	1.295 - 2.234	<.001
Adolescent Snares	3.507	2.797 - 4.397	<.001	3.057	2.415 - 3.870	<.001	--	--	--

[a] IRR, [b] OR, [c] Standardized OLS regression coefficient, [d] This analysis is restricted to 47% of the Study members who have had a child.

Supplemental Table 5. Does lack of self-control at pre-school ages (3-5 years) lead to poor health, wealth related problems, and criminal convictions in adulthood?

Adult outcomes:	Coeff	95% CI/SE	P
A. Health			
Physical Health Index [a]	1.102	1.059 - 1.147	<.001
Substance Dependence Index [a]	1.103	1.031 - 1.18	.004
Informant-reported Substance Abuse Problems [c]	.103	.020	.001
B. Wealth			
Socioeconomic Status [c]	-.153	.021	<.001
Income [c]	-.135	.020	<.001
Single Parent Child Rearing [b, d]	1.232	1.092 - 1.391	<.001
Financial Planfulness [c]	-.129	.020	<.001
Financial Struggles [c]	.048	.020	.141
Informant-reported Financial Problems [c]	.130	.020	<.001
C. Public Safety			
Criminal Conviction [b]	1.219	1.116 - 1.331	<.001

[a] IRR, [b] OR [c] Standardized OLS regression coefficient, [d] This analysis is restricted to 47% of the Study members who have had a child.

Supplemental Table 6. The composite measure of childhood self control includes information derived from 4 reporting /informant sources: observational ratings of children's lack of self-control at ages 3-5; teacher ratings of children's self control at ages 5,7, 9, and 11; parent reports of children's self control at ages 5,7, 9, and 11; and children's self-reports at age 11 years. This table shows associations between observer (A), teacher (B), parent (C), and children's self (D) reports of self control and each of the adult outcomes. Whether we examined self control as measured by observers, teachers, parents, or children's self reports, individual differences in childhood self control were significantly related to adult health, wealth, and public safety outcomes; that is, the results were not sensitive to the use of any particular source of information about children's self control and were robust to data source in measuring self control.

Adult Outcomes	A. Observer			B. Teacher		
	Coefficient	**95% CI / SE**	**P**	**Coefficient**	**95% CI / SE**	**P**
A. Health Outcomes						
Physical Health Index [a]	1.102	1.059 - 1.147	<.001	1.221	1.127 - 1.322	<.001
Substance Dependence Index [a]	1.103	1.031 - 1.180	0.004	1.274	1.120 - 1.449	<.001
Informant-Rated Substance Abuse Problems [b]	0.103	0.020	0.001	0.178	0.039	<.001
B. Wealth						
Socio-Economic Status [c]	-0.153	0.021	<.001	-0.210	0.040	<.001
Income [c]	-0.135	0.020	<.001	-0.211	0.038	<.001
Single-Parent Child-Rearing [b,d]	1.232	1.092 - 1.391	<.001	1.439	1.127 - 1.837	0.004
Financial Planfulness [c]	-0.129	0.020	<.001	-0.176	0.039	<.001
Financial Struggles [c]	0.048	0.020	0.141	0.153	0.039	<.001
Informant-Rated Financial Problems [c]	0.130	0.020	<.001	0.232	0.039	<.001
C. Public Safety						
Criminal Convictions [b]	1.219	1.116 - 1.331	<.001	1.881	1.575 - 2.246	<.001
Adult Outcomes	C. Parent			D. Child		
	Coefficient	**95% CI / SE**	**P**	**Coefficient**	**95% CI / SE**	**P**
A. Health Outcomes						
Physical Health Index [a]	1.122	1.023 - 1.231	0.015	1.098	0.996 - 1.209	0.060
Substance Dependence Index [a]	1.195	1.031 - 1.385	0.018	1.314	1.127 - 1.532	0.001
Informant-Rated Substance Abuse Problems [b]	0.110	0.042	0.001	0.141	0.043	<.001
B. Wealth						
Socio-Economic Status [c]	-0.191	0.043	<.001	-0.183	0.045	<.001
Income [c]	-0.144	0.042	<.001	-0.165	0.044	<.001
Single-Parent Child-Rearing [b,d]	1.275	0.991 - 1.641	0.059	1.802	1.317 - 2.464	<.001
Financial Planfulness [c]	-0.062	0.042	0.061	-0.192	0.044	<.001
Financial Struggles [c]	0.073	0.042	0.026	0.144	0.044	<.001
Informant-Rated Financial Problems [c]	0.213	0.041	<.001	0.177	0.044	<.001
C. Public Safety						
Criminal Convictions [b]	1.623	1.347 - 1.957	<.001	1.616	1.324 - 1.972	<.001

[a] IRR, [b] OR, [c] Standardized OLS regression coefficient, [d] This analysis is restricted to 47% of the study members who have had a child. Results are sex adjusted.