

## Codebook for validated measures of childhood socio-economic status using HRS data

The financial capital, social capital, and human capital variables are coded so higher numbers reflect higher capital, and the cSES index is coded so higher numbers reflect higher SES in childhood.

Variable Name	Variable Content	N
HHID	HRS household ID number	31,169
PN	HRS person number	31,169
fincap	Childhood financial capital scale (sum of 2 factors listed below)	27,890
ave_fin_re	Average financial resources in childhood	27,890
fin_inst*	Financial instability in childhood	27,890
soccap	Childhood social capital (sum of 2 factors list below)	27,865
maternal	Maternal investment (quality of relationship with mother)	27,865
famstr	Family structure (number of household adults)	27,865
humcap	Childhood human capital index (sum of parental education variables listed below)	31,169
myrs	Mother's years of education	31,169
fyr	Father's years of education	31,169
cses_index	Childhood SES index. Average of childhood financial, human, and social capital; if an individual was missing data on one or more component variables, the index was created by averaging the other variables	31,169

\* Financial instability was reverse coded so higher numbers reflect more instability to make the direction of the variable more consistent with the name of the variable. To calculate the financial capital scale from the two factors, first reverse-code the financial instability factor, and then sum the factors.

Before including these measures in regression models, users are encouraged to check the collinearity of these variables a) with each other and, b) with other included demographic variables as very high collinearity was observed in some samples.

If you use these measures, please cite our article:

Vable AM, Gilsanz P, Nguyen TT, Kawachi I, Glymour MM (2017) Validation of a theoretically motivated approach to measuring childhood socioeconomic circumstances in the Health and Retirement Study. PLoS ONE 12(10): e0185898. <https://doi.org/10.1371/journal.pone.0185898>

### Brief description of how measures were created

These measures were created using publicly available data from the Health and Retirement Study (1992 – 2010, N = 31,169, includes cohort added in 2004). For the childhood financial capital and human capital scales, exploratory factor analysis was used to determine the factor structure, and full-information confirmatory factor analysis was used to impute scale scores for individuals who were missing data on some, but not all, of the variables that make up the scale. Childhood human capital was conceptualized as an index, not a scale, as mother's and father's education likely do not have a common cause of co-variation, although they are often correlated; continuous information for mother's and father's education was imputed for individuals with missing or dichotomized data using expectation maximization.

The internal consistency reliability (childhood financial capital and childhood social capital), and construct and predictive validity (childhood financial capital, childhood social capital, childhood human capital) of these measures were assessed and found to be acceptable overall. Please see tables below and our published paper for more details. The code we used to create these measures is publicly available on GitHub:

<https://github.com/anushavable/Validated-cSES-measures-in-HRS>

Table 1. Internal consistency reliability of the childhood social capital, and financial capital scales

Scale	N	Standardized Cronbach's alpha
Childhood social capital	226	0.63
Maternal investment	6871	0.89
Family structure	595	0.52
Childhood financial capital	657	0.63
Average financial resources	664	0.56
Financial instability	718	0.74

Reliability is assessed among individuals who have data on all scale items; many of the questions included in the social and financial capital scales were included in experimental modules, resulting in relatively small Ns for the reliability calculation. It is not appropriate to calculate the reliability of an index, so childhood human capital is not included in this table.

Overall, we concluded that the social capital and financial capital scales had acceptable reliability.

Table 2. Linear regression models evaluating relationships between childhood SES domains and theoretical correlates

	Predictors	Childhood social capital			Childhood financial capital			Childhood human capital		
		N	$\beta$	p-value	N	$\beta$	p-value	N	$\beta$	p-value
	Childhood financial capital	27,690	0.07	<.0001						
	Childhood human capital	27,865	0.01	0.0241	27,890	0.21	<.0001			
Construct validity	Childhood drug / alcohol problems	13,370	-0.16	0.009	13,353	-0.34	<.0001	13,370	0.13	0.235
	Childhood learning problems	16,626	-0.11	<.0001	16,606	-0.21	<.0001	16,626	-0.05	0.292
	Childhood self-rated health	26,663	-0.03	<.0001	26,682	-0.10	<.0001	26,714	-0.17	<.0001
Predictive validity	Educational attainment	27,804	0.01	<.0001	27,829	0.04	<.0001	30,677	0.16	<.0001
	Measured height	12,844	0.01	<.0001	12,837	0.002	0.19	12,844	0.04	<.0001

All betas are linear regression coefficients; the row variables predicted the column variables. Childhood social, financial, and human capital, educational attainment, and measured height are coded so higher numbers reflect better properties; childhood drug / alcohol problems, learning problems, and self-rated health are coded so lower numbers reflect better properties. Childhood drug / alcohol problems, learning problems, and self-rated health were used to assess construct validity, while educational attainment and measured height were used to assess predictive validity.

Overall, we concluded that the social capital scale, the financial capital scale, and the human capital index had acceptable construct validity and predictive validity.