

Socioeconomic and Demographic Correlates of a Self-Rated Health Trajectory in Young Adulthood

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Extended Abstract

Although research addressing the socioeconomic health gradient is voluminous, very little is known about how race/ethnicity moderates the influence of socioeconomic factors on health (Williams et al., 2010) or the mechanisms that may account for such differences (Cohen et al., 2010). In this study we use data from four waves of the National Longitudinal Study of Adolescent Health (Add Health) to explore potential racial/ethnic moderators and mechanisms in trajectories of self-rated health from adolescence to mid-adulthood. This phase of life is a particularly strategic time to study health because young adults have largely completed their educations, started full-time work, and begun to establish their own households, all transitions which present new opportunities and stressors. Furthermore, life-style factors began to differ greatly among individuals in adolescence and young adulthood, which could lead to health differences.

This paper addresses these themes by (1) modeling longitudinal patterns in self-rated health across four waves of data from the Add Health; (2) establishing differences in these patterns by race/ethnicity, sex, and parental socioeconomic status; and then (3) examining the mediating mechanisms that may account for these differences. To date, we have addressed Aims (1) and (2) and plan to examine Aim (3) prior to the PAA meeting.

Aim 1: Longitudinal Patterns of Self-Rated Health

We focus on self-rated health because it is available in all waves of Add Health and represents a valid measure of the current physical health status of respondents (Ferraro and Farmer 1999; Ilder and Benyamini 1997). The sample consists of white, black, or non-Cuban Hispanic respondents who have complete data for health, age, and parent education. The data were reorganized by age (as opposed to wave) in order to have a more meaningful metric for time. Restructuring the data in this fashion forces us to drop 2,117 observations from Wave II for respondents who were the same age (in years) in both Waves I and II. Finally, we dropped observations for any age by wave combination (e.g., age 11 at wave 1) with less than 100 cases to avoid unreliable data points. The data consist of 54,162 person-age observations (see Table 1) representing 17,397 respondents. These data provide an average of 3.1 observations of self-rated health for each individual and allows for an examination of ages ranging from 12 to 32.

-- Table 1 about here --

Figure 1 illustrates the average self-rated health by age with bars indicating +/- 1 standard deviation and shows a stable, essentially flat trajectory for self-rated health through age 24 and then a downward trend through age 32. There is also a fair amount of variation in self-rated health at each age that remains roughly constant across ages. Figure

2 shows average self-rated health by age for each wave of Add Health, revealing that mean levels of self-rated health are roughly constant across ages within each wave. It is also apparent that the downward trend in self-rated health after age 24 evident in Figure 1 is based on the shift in levels from Wave 3 to Wave 4.

-- Figures 1 and 2 about here --

Table 2 presents descriptive statistics for the respondents in our analysis. About half of the respondents are female, 24 percent are black and 17 percent are non-Cuban Hispanic. Parental education reflects the maximum of either parent on a five-point scale ranging from 1 (less than high school) to 5 (graduate or professional degree). We also analyze logged parent income, but it is missing for close to 25 percent of the sample, so we run models with and without it.

-- Table 2 about here --

Multilevel growth models are used to analyze the trajectories in self-rated health.¹ These analyses treat self-rated health as a continuous variable, although subsequent analyses will also examine it as an ordered categorical variable. The data are unweighted to avoid a very large loss of cases. The within-person equation takes the form

$$SRH_{it} = \alpha_i + \beta_i(age)_{it} + \varepsilon_{it}, \quad (1)$$

where i indexes individuals and t indexes age. In some models (not reported) a quadratic term for age was examined, but it did not improve the fit of the model.

The between-person equations take the form

$$\begin{aligned} \alpha_i &= \gamma_{00} + \gamma_{01}\mathbf{x}_i + \nu_{0i} \\ \beta_i &= \gamma_{10} + \gamma_{11}\mathbf{x}_i + \nu_{1i} \end{aligned} \quad (2)$$

where \mathbf{x}_i is a vector of covariates that includes the wave (with Wave 1 as the referent), female, black and non-Cuban Hispanic (with white as the referent), parent education, and parent income.² Due to the amount of missing data in parent income, it was excluded in initial models.

We begin by estimating a baseline growth model to establish the variation in self-rated health trajectories among Add Health respondents (see Table 3). As expected from Figure 2, there is no indication of an age effect on self-rated health net of adjusting for wave. Also consistent with Figure 2, there is a slight increase in self-rated health in Wave 2 compared with Wave 1, a larger increase in Wave 3, and then a drop in Wave 4. The difference between Waves 3 and 4 is about a 0.35 shift in self-rated health, which is notable given the common understanding that self-rated health is a largely stable phenomenon. On the other hand, the downward shift is consistent with the view that health begins to deteriorate for some people during this phase of life (Harris, 2009). There is also significant

¹ In a preliminary analysis we also estimated age-vector models (Mirowsky and Kim 2007) and obtained substantively similar results.

² In a preliminary analysis we considered low birth weight as a covariate, but we did not find that it had any relationship with levels of self-rated health.

variation in the level and slope of self-rated health. The variation in the slope, however, appears to be marginal and so we do not attempt to model it with covariates.

Aim 2: Socio-Economic Differences in Self-Rated Health Trajectories

Table 4 reports estimates of the models with covariates. Females have lower levels of self-rated health than males and non-Cuban Hispanics have lower levels than whites. Higher levels of parental education are associated with increasing levels of self-rated health. Blacks do not have significantly different levels of self-rated health than whites.

-- Table 4 about here --

The third model includes interactions between each of the background variables and indicators for Waves 3 and 4. The interactions involving Wave 3 are all small in magnitude but nevertheless suggest that the Wave 3 elevation is slightly more pronounced for Blacks, females, and Hispanics, and slightly depressed for those respondents whose parental are better educated. The interactions involving Wave 4 show that the Wave 4 decrement is more pronounced for blacks and Hispanics, and that females and higher parental education are protective factors.

There is little change in the estimated variance components, suggesting that the demographic characteristics and childhood SES do not explain much of the variance in levels of self-rated health.

-- Table 5 about here --

The final models, shown in Table 5, analyze the effect of parental income on levels of self-rated health. We see a similar pattern of effects among our covariates with one exception: blacks have significantly lower levels of self-rated health than whites. Thus, the “black effect” should be interpreted with caution because it is sensitive to model specification. But the more fully specified model suggests that blacks’ self-rated health is lower than that reported by whites. With respect to parent income, we find, as expected, a significant positive effect on the levels of self-rated health.

Aim 3: Mechanisms Explaining Socioeconomic Differences in Self-Rated Health

In future analyses, we will examine the mechanisms that may account for the significant interactions observed in Tables 4 and 5. Because age trends in Waves I and II are flat and only slight deviations from the grand mean, and because Wave III is not predicted in a substantively meaningful way by the covariates, we focus on the decrement in self-rated health at Wave IV. That is, what mechanisms account for the decrease associated with Wave 4 (and its associated second order interactions)? The hypothesized mechanisms fall into two broad categories. Many sociological investigations emphasize the central role of stressors in health, a position supported by a growing body of biological evidence involving epigenetic and transcriptional processes involving the HPA axis (e.g., Miller et al., 2009; Chen et al., 2010). Many epidemiological studies have focused on the central role of life-style factors (or health-related behaviors). The two categories of variable refer to mechanisms that are not mutually exclusive, although few studies have examined them together, particularly in young adulthood. We will therefore focus on these two sets of variables as potential mechanisms explaining the notable decrement in Wave IV self-rated health.

Tables and Figures

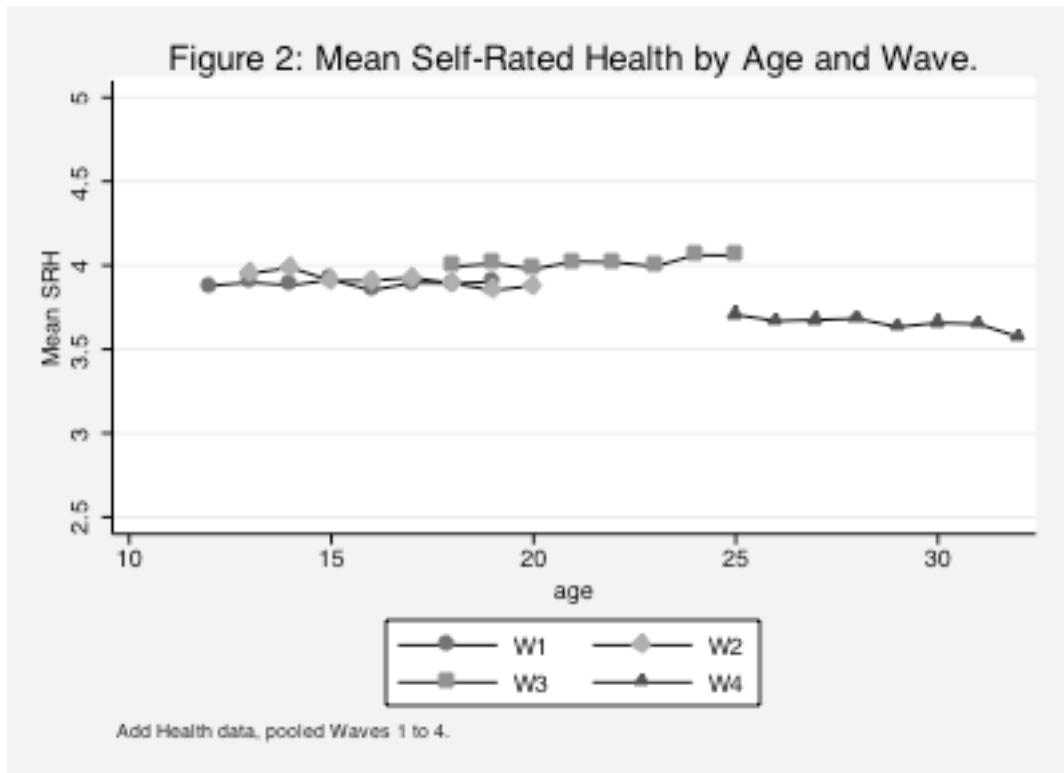
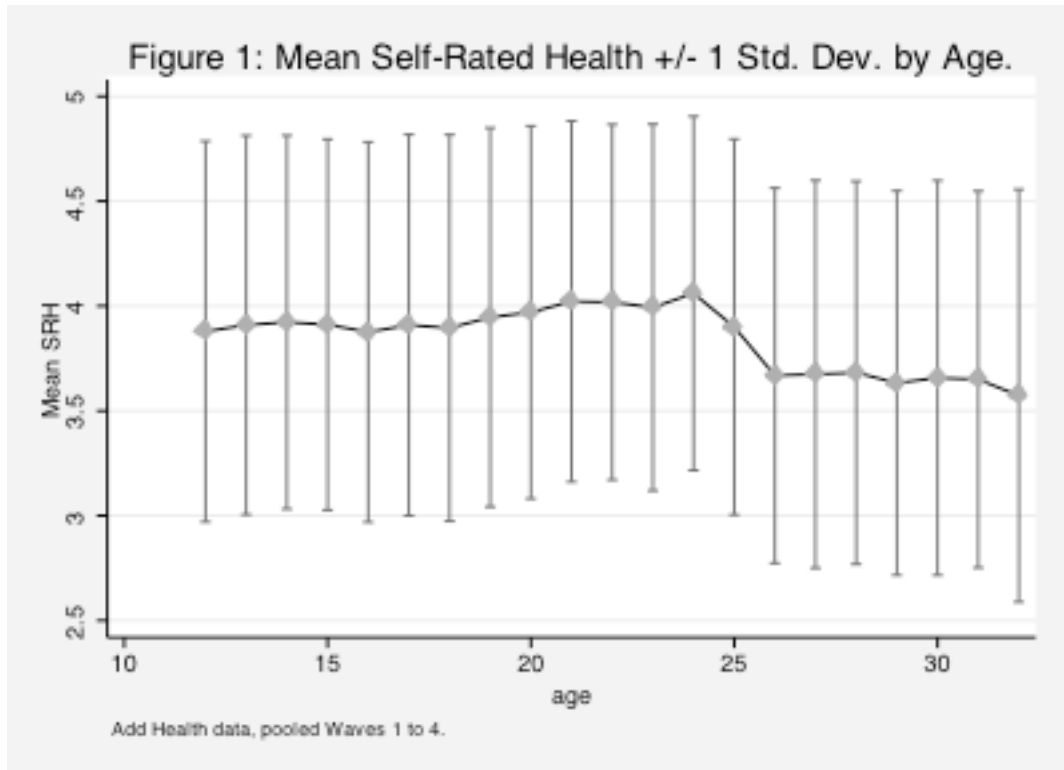
Table 1: Sample Size by Age and Wave.

age	Wave 1	Wave 2	Wave 3	Wave 4	Total
12	461	0	0	0	461
13	1,860	484	0	0	2,344
14	2,294	1,548	0	0	3,842
15	2,918	1,934	0	0	4,852
16	3,190	2,394	0	0	5,584
17	3,067	2,479	0	0	5,546
18	2,345	1,924	129	0	4,398
19	332	698	1,292	0	2,322
20	0	139	1,760	0	1,899
21	0	0	2,129	0	2,129
22	0	0	2,415	0	2,415
23	0	0	2,399	0	2,399
24	0	0	1,985	0	1,985
25	0	0	631	512	1,143
26	0	0	0	1,606	1,606
27	0	0	0	1,974	1,974
28	0	0	0	2,409	2,409
29	0	0	0	2,533	2,533
30	0	0	0	2,413	2,413
31	0	0	0	1,597	1,597
32	0	0	0	311	311
Total	16,467	11,600	12,740	13,355	54,162

Table 2: Descriptive Statistics; N = 17,397.

	Mean	Std. Dev.
Female	0.51	0.50
Black	0.24	0.43
Non-Cuban Hispanic	0.17	0.37
Parent education	2.85	1.33
Parent income	3.52	0.85

Notes: Parent education is a five category variable ranging from 1 = less than high school to 5 = graduate or professional degree. Parent income missing for 23 percent of respondents.



**Table 3: Parameter Estimates from
Growth Model with No Covariates.**

	Model 1		
	Est	SE	p-val
Fixed Effects			
_constant	3.921	0.047	0.000
Age	-0.002	0.003	0.472
Wave 2	0.032	0.009	0.000
Wave 3	0.140	0.020	0.000
Wave 4	-0.198	0.039	0.000
Var. Components			
sd(_constant)	1.107	0.019	
sd(age)	0.044	0.001	
sd(residual)	0.667	0.003	

Notes: Obs = 54,162, N = 17396.

Table 4: Parameter Estimates from Growth Models with Covariates.

	Model 2			Model 3		
	Est	SE	p-val	Est	SE	p-val
Fixed Effects						
_constant	3.732	0.049	0.000	3.720	0.050	0.000
Age	0.001	0.003	0.660	0.002	0.003	0.582
Wave 2	0.031	0.009	0.001	0.031	0.009	0.000
Wave 3	0.119	0.020	0.000	0.190	0.029	0.000
Wave 4	-0.241	0.038	0.000	-0.292	0.045	0.000
Female	-0.148	0.010	0.000	-0.181	0.012	0.000
Black	0.024	0.012	0.056	0.056	0.015	0.000
nC Hispanic	-0.062	0.015	0.000	-0.051	0.018	0.004
Parent Education	0.075	0.004	0.000	0.080	0.005	0.000
W3 x Female				0.024	0.015	0.111
W3 x Black				0.007	0.019	0.695
W3 x nC Hispanic				0.048	0.022	0.032
W3 x Parent Edu.				-0.033	0.006	0.000
W4 x Female				0.110	0.017	0.000
W4 x Black				-0.136	0.021	0.000
W4 x nC Hispanic				-0.094	0.025	0.000
W4 x Parent Edu.				0.012	0.007	0.072
Var. Components						
sd(_constant)	1.096	0.019		1.095	0.019	
sd(age)	0.045	0.001		0.045	0.001	
sd(residual)	0.666	0.003		0.665	0.003	

Notes: Obs = 54,162, N = 17396.

Table 5: Parameter Estimates from Growth Models Including Parent Income.

	Model 4			Model 5		
	Est	SE	p-val	Est	SE	p-val
Fixed Effects						
_constant	3.577	0.060	0.000	3.567	0.062	0.000
Age	0.000	0.003	0.949	0.000	0.003	0.978
Wave 2	0.037	0.010	0.000	0.037	0.010	0.000
Wave 3	0.120	0.023	0.000	0.223	0.047	0.000
Wave 4	-0.218	0.044	0.000	-0.302	0.063	0.000
Female	-0.132	0.012	0.000	-0.167	0.014	0.000
Black	0.056	0.015	0.000	0.083	0.017	0.000
nC Hispanic	-0.053	0.017	0.002	-0.050	0.021	0.016
Parent Education	0.058	0.005	0.000	0.061	0.006	0.000
Parent Inc. (log)	0.059	0.008	0.000	0.061	0.009	0.000
W3 x Female				0.023	0.017	0.181
W3 x Black				-0.001	0.022	0.950
W3 x nC Hispanic				0.056	0.026	0.030
W3 x Parent Edu.				-0.029	0.008	0.000
W3 x Parent Inc.				-0.011	0.012	0.359
W4 x Female				0.119	0.019	0.000
W4 x Black				-0.110	0.024	0.000
W4 x nC Hispanic				-0.064	0.029	0.027
W4 x Parent Edu.				0.018	0.009	0.034
W4 x Parent Inc.				-0.001	0.013	0.926
Var. Components						
sd(_constant)	1.088	0.021		1.087	0.021	
sd(age)	0.044	0.001		0.044	0.001	
sd(residual)	0.659	0.003		0.658	0.003	

Notes: Obs = 42,201, N = 13,362.