Household Financial Assets Inequity and Health Disparities Among Young Adults: Evidence from the National Longitudinal Study of Adolescent to Adult Health

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Abstract

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Methods: Using data from the National Longitudinal Study of Adolescent to Adult Health (*n* = 10,861), this study investigated the relationships between three household total assets value groups (low, moderate, and high assets) and three net worth groups (negative, neutral, and positive) on young adults' general health, obese, and depression.

Results: Both assets and debts were related to young adults' health status, young adults with more assets and positive net worth have higher probability to report a better level of both general health and depression. Young adult's obesity was found to be associated with net worth but not with assets.

Conclusions and Implications: Our work connects health promotion with poverty alleviation to address the challenge of health disparity. A better understanding of different forms of financial resources (e.g., income, assets, and debts) and their dynamic relationships with health outcomes will contribute to developing effective asset-based interventions for promoting health status. Particularly, current policy and practice should consider the importance of resolving and clearing debt.

Keywords

health; depression; obesity; financial assets; health disparities; Add Health

Cover Page Footnote

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ABSTRACT

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Keywords: health, depression, obesity, financial assets, health disparities, Add Health

INTRODUCTION

The prosperity of the country relies on a healthy population who can be responsible for a productive society. The U.S. society has made a progress in increasing life expectancy and decreasing infant mortality over the past years (CDC, 2015). However, evidence suggests that Americans are increasingly plagued with chronic health conditions and mental disorders (Wald,

2014; Olfson, Blanco, Wang, Laje, & Correll, 2014). Almost half of all adults had one or more chronic diseases in 2012 and more than one-third of adults were obese during 2009-2010 (CDC, 2016b). Mental health diagnoses and psychiatrist visits also rapidly increased among each age group (Olfson et al., 2014).

To better understand the population health conditions, the social determinants of health (SDH) can be used as a theoretical framework that relates people's health to "the circumstances in which people grow, live, work and age, and the systems put in place to deal with illness" (Marmot et al., 2008, pp.1661). Numerous studies suggested that the socially disadvantaged people were more likely to succumb to cardiovascular disease (Korkeila et al., 2010), diabetes (Espelt et al., 2008), obesity (Bennett, Wolin, & Duncan, 2008); cancer (Gerend & Pai, 2008), and mental health problems (Viner et al., 2012). Among those social conditions, socioeconomic status (SES), conventionally measured by income, education, and occupation, is one of the most prominent social determinants of health (Phelan, Link & Tehranifar, 2010; Wu, 2017). The plausible mechanisms through which SES 'gets under the skin' to affect health outcomes are material deprivation (Raphael et al., 2003); psychological stress (Adler & Snibbe, 2003) and higher propensity to develop health compromising behaviors (Hanson & Chen, 2007; Wu, Zerden, & Wu, 2016). Although traditional measures are informative, recent studies called for further exploring the association between SES and health status by examining other facets of SES, particularly assets and debts (Huang, Wu, & Deng, 2016; Sweet, Nandi, Adam, & McDade, 2013; Walseman, Gee, & Gentile, 2015).

Assets are lifetime financial resources that can be used to generate returns, exchanged for some values and passed on to the next generation (Sherraden, 1991). Rather than income only indicating the effect during a certain time period, the variable of assets may reflect the long-term influences the command of material resources on health outcomes. Assets can also smooth the dire effects of temporary income fall or expenditure rise due to economic downturn or family emergency. Research showed that compared to homeowners, renters were more likely to report negative health outcomes (Jackson, Jones, & Mishra, 2014; Luong, 2013) and higher level of psychological distress (Cairney & Boyle, 2004). Household assets were associated with the overall health, frequency of hospitalization and physical illness induced school absence of children with disability (Huang, 2011). Evidences from developing countries also suggested that household assets were highly related to child mortality and malnutrition (Amin & Li, 1997), as well as children's status regarding underweight and stunted growth (Kafle & Jolliffe, 2015).

On the other hand, debts are associated with extensive mental health problems, including psychological distress (Selenko & Batinic, 2011), anger and anxiety (Drentea & Reynolds, 2012), depression (Bridges & Disney, 2010; Sweet et al., 2013), mental disorder (Jenkins et al., 2008), or even suicide ideation (Meltzer et al., 2011). Empirical studies also showed that those who had personal debts were more likely to report inferior health outcomes and physical functioning (Drentea & Lavrakas, 2000; O'Neill et al., 2006) as well as being obese (Munster, Ruger, Ochsmann, Letzel, & Toschke, 2009). Therefore, using household debts and assets as the indicators of household financial situation, allows to yield a nuanced understanding of the relationship between household financial situation and health outcomes among young adults.

Existing research on assets and debts mainly focused on the populations of middle-aged adults or the elders who have accumulated assets over a long period. Few studies have targeted the individuals in the transitional period of early adulthood to middle age, who are just starting to independently meet complex life challenges, and beginning to accumulate assets. Based on the SDH perspective, young adults experiencing potential stressors of intimacy relationship,

parenting and career development, and therefore, it is worthwhile to explore the factors that are related to health outcomes among young adults. This study fills the research gap by examining the question of whether the association between household financial assets and health is valid for young adults in the transitional period. Specifically, this study aims to explore whether the significance of assets for health outcomes among young adults from high-asset households or moderate-asset households differ from low-asset households. In addition, this study investigates the effects of household net worth (i.e., assets minus debts) on young adult health outcomes.

METHODS

Data

This study used the Wave I and Wave IV data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative data of grades 7-12 students of 1994-1995 school year. (See more details of the survey design in Harris et al., 2012). The analytic sample of this study are the subsample of 15,701 respondents in Wave I and IV. About 15% adolescents whose parents did not finish the interview at Wave IV yielded 901 missing values. A sub-population analysis was conducted to correct the estimating biases (Chen & Chantala, 2014).

Measures

Dependent Variables for Health Outcomes. This study examined three dimensions of health status that are highly related to the period of young adulthood: general health, obese, and depression. *General health* was measured by asking participants "In general, how is your health?" in Wave IV. It was recorded using five response options ranging from *excellent* to *poor* health, which were later collapsed to two categories: good (i.e., *excellent, very good, good* = 1) and poor general health (i.e., *fair or poor* = 0). *Obesity* was measured based on the body mass index (BMI) score of young adults in Wave IV. BMI is a widely used clinical measure of adiposity and a statistically valid measure of overweight (Swallen et al., 2005). BMI between 18.5 and 25 denotes weight as in a *normal* range; BMI between 25 and 30 denotes weight as overweight; and BMI of 30 or more denotes weight as obese. We lumped overweight and obese together to create a dummy variable of *obese*, with 0 representing participants' BMI below 30 while 1 representing BMI above 30. *Depression* was measured by using a modified short version of the Center for Epidemiologic Studies Depression Scale (CES-D; Cronbach's α = 0.81) in Wave IV, including nine items asking participants to rate their levels of agreement of the statements describing behavior in the past week. Responses for the nine items in the 0-3 Likert scale were summed, with higher values indicating severer depression.

Key Independent Variables. Household assets and household net worth were two key independent variables for examining health outcomes. Household assets would indicate the asset effect while household net worth would reflect the debt effect.

Household assets in Wave IV were measured by asking participants' best estimates of the total value of their assets and the assets of everyone who lives in their household and contributes to the household budget, including assets such as bank accounts, retirement plans and stocks. It was re-coded by lumping the original 9 categories into 3 groups: (a) *low assets* (estimated household assets less than $10,000), (b) *moderate assets* (from $10,000 to $99,999), and (c) *high assets* (more than $100,000). Each category was recoded as a dummy variable.

Net worth was measured by asking "*Suppose you and others in your household were to sell all of your major possessions (including your home), turn all of your investments and other assets into cash, and pay off all of your debts. Would you have something left over, break even,*

or be in debt?" Three dummy variables were created: (a) *positive net worth* (left over = 1; assets exceed debt); (b) *neutral net worth* (breakeven = 1; debts equal assets); and (c) *negative net worth* (in debt = 1; debts exceed assets).

Control Variables. We also controlled for other socioeconomic and demographic variables at parental, parental household, and young adult levels. We controlled parental *education* and *Health status* (good, fair and poor). At the parental household level, we controlled *household structure* (two biological parents; two parents one biological; single parent and others), *Household size* and *Welfare participation* (whether any member of participants' household had ever received any welfare assistants; 1=yes and 0=no). At the young adult level, we controlled *gender*, *age*, *race* (White; Black; Hispanic; Asian; Native American and others), and marital status (1= married or cohabitating; 0 = others). We also controlled *Self-perceived intelligence* measured by asking adolescents "*compared to other people in your age, how intelligent are you?*" Responses ranked from 1 (= moderately below average) to 6 (= extremely above average) were treated continuously. In addition, Self-reported personal income was recoded as 3 dummy variables using the same categories as total household assets value: low (< $10,000), moderate ($10,000 - $ 99,999), high (>$99,999) income. Young adults' *highest education* was recoded as 4 dummy variables: high school graduate and less, some colleges, college graduate, and some graduate school and above.

General Analytical Approaches

Descriptive analysis was used to capture the overall distributions of all variables. For two key independent categorical variables – household assets and household net worth – simple regression models were first conducted to regress three health outcomes on key independent variables only. The simple regression models include logistic regression models for dichotomous dependent variables of general health and obese and OLS regression for depression. Then the full models with all other control variables were conducted to examine whether the effects of assets and net worth on health were modified by the demographic and socioeconomic factors at the parent, parental household and young adult level.

Stata 13.1 was used to conduct data analyses. Survey command on sub population (n = 10,861) analysis with wave IV cross-sectional sampling weights were used for all the descriptive and regression analyses. The results can yield national population estimates through adjusting the complexity survey design of unequal probability and clustering selection of Add Health (Chen & Chantala, 2014).

RESULTS

Descriptive Results

Table 1 shows the weighted descriptive statistics for all health outcomes at Wave IV (average age 24 years). Results showed that 91% of young adults reported their health status as *good*. The average BMI was 29.24, with about one third (32%) of the sample within normal BMI indices, nearly another one third (30%) classified as overweight and more than one third (36%) classified as obese. The average depression score of participants was 5.13.

As shown in Table 1, slightly less than a third (30%) of the sample lived in low-assets household, about half (51%) lived in moderate-assets households, and about one fifth (19%) lived in high asset households. Participants' estimations of household net worth were based on a prescribed formula of subtracting total debts from the value of total household assets. Household net worth was then reported as would *still be in debt* (negative), would *break even (neutral)*, or would *have assets left over (positive)*. The majority of the sample (62%) reported they would

have a positive net worth whereas 21% reported negative household net worth (i.e., *would still be in debt*), and 17% reported neutral net worth (i.e. *would break even*).

Table1.Weighted Descriptive Statistics for All Variables, Add Health, Wave I(1994-1995) and Wave IV (2008-2009)

Dependent Variables	**Mean**	**95% CI**
Good General Health (1=Excellent/very good/good; 0=Fair/poor) [4]	0.91	[0.90 ,0.92]
Obese (BMI: > 30; 1=yes; 0=no) [4]	0.36	[0.35, 0.38]
Depression (CES-D) [4]	5.13	[4.98, 5.28]
Key independent variables		
Household Assets Categories[4]		
Low (< $10,000)	0.30	[0.28, 0.32]
Moderate ($10,000 - $ 99,999)	0.51	[0.50, 0.53]
High (>$99,999)	0.19	[0.17, 0.20]
Household Net Worth Categories[4]		
(=Total assets value - debts)		
Negative (< 0)	0.21	[0.20, 0.22]
Neutral (= 0)	0.17	[0.16, 0.19]
Positive (> 0)	0.62	[0.60, 0.63]
Control variables		
Parental Level		
Education	5.45	[5. 26, 5.65]
Health status		
Good	0.86	[0.84, 0.88]
Fair	0.11	[0.09, 0.12]
Poor	0.03	[0.03, 0.04]
Parental Household Level		
Welfare participation [4]	0.24	[0.21, 0.26]
Family Structure		
Others	0.05	[0.04, 0.06]
Single parent	0.28	[0.26, 0.31]
Two parents one biological	0.11	[0.10, 0.12]
Two biological parents	0.56	[0.53, 0.58]
Household Size	3.44	[3.37, 3.52]
Young adults Level		
Male	0.49	[0.48, 0.51]
Age	15.87	[15.63, 16.11]
Race		
White	0.69	[0.63, 0.74]
Black	0.15	[0.11, 0.19]
Hispanic	0.11	[0.08, 0.15]
Asian	0.03	[0.01, 0.04]
Native American and Others	0.03	[0.02, 0.04]
Self-perceived Intelligent	3.90	[3.85, 3.94]
Income level [4]		
Low (< $10,000)	0.19	[0.18,0.21]
Moderate ($10,000 - $ 99,999)	0.78	[0.76,0.79]
High (>$99,999)	0.03	[0.03,0.04]
Highest Education [4]		
High school graduate and less	0.25	[0.22,0.28]
Some colleges	0.43	[0.41,0.45]
College graduate	0.20	[0.18,0.22]
Some graduate school and above	0.12	[0.10,0.14]
Married/cohabitating [4]	0.66	[0.64,0.68]

Notes: Number of Observation = 14,777; Sub-population = 10,861; [4] denotes Wave IV data, otherwise from Wave I.

The average level of parental education was between vocational schools and graduated from college. The vast majority of parents (86%) rated their health as *good*. The average household size was 3.44 persons. More than half (56%) of the participants were from households with two biological parents, and about one third (28%) were from a single parent household. At the household level, 24% of young adults had been raised in households that had at least one episode of receiving public assistance.

For the young adults, about half (49%) were male, 69% were White, and the average age of the Wave I adolescents was 15.87. Participants' average self-perceived intelligence score was 3.9 (range: 1- 6). At Wave IV, more than three quarters (78%) of the young adults reported personal earned income between $10,000 and $ 99,999. About half (43%) of the young adults reported *some college* as their highest educational level. About 66% of participants were married or cohabiting with a partner.

Household Assets Effects on Health

According to the basic model (See Table 2), those with moderate and high assets had significantly higher probabilities of reporting better general health and significantly lower probabilities of reporting being obese and depressed than low assets group. The full model showed significantly higher rates of better general health reported by young adults with assets at the moderate (by 43%, $p < 0.001$) and high (by 132%, $p < 0.001$) levels. The same trend with an inverse direction was found in the significantly lower levels of depression among the moderate ($\beta = -0.70$) and high ($\beta = -0.70$) asset groups. However, there were no statistically significant differences in rates of obesity across the three assets levels in the full model.

Table 2. Weighted Results1 of Health Outcomes by Household Assets Categories, Add Health, 2008-2009

Dependent Variables	Assets Categories *(Ref. = Low[2])*	Basic Model OR [95% CI]	Full Model OR [95% CI]
Good General Health (1=Excellent/very good/good; 0=Fair/poor)	Moderate	1.964*** [1.630, 2.367]	1.433*** [1.172, 1.753]
	High	3.572*** [2.616, 4.877]	2.318*** [1.684, 3.190]
Obese (BMI: > 30)	Moderate	0.828** [0.734 - 0.933]	0.946 [0.837, 1.070]
	High	0.729*** [0.632, 0.840]	0.912 [0.784, 1.060]
	Assets Categories *(Ref. = Low[2])*	**Basic Model Coef. (*SE*)**	**Full Model Coef. (*SE*)**
Depression (CES-D)	Moderate	-1.420*** (0.128)	-0.704*** (0.123)
	High	-1.656*** (0.144)	-0.699*** (0.141)

Note. [1] Basic model with no controls (n = 14,800); Full model controls for sociodemographic, socioeconomic variables at parental, parental household, and young adult levels (n = 14,777); [2] Reference group consists of those who would still be in debt after liquidating all assets to pay existing debts (i.e., negative net worth); 95% CI are in brackets; Linearized SE are in parentheses;*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Confounders. Table 3 demonstrated the effects of confounders on health outcomes as predicted by household assets categories. Four variables were significantly associated with lower likelihood of adults reporting good general health: *household had ever received welfare*

assistance (by 28%), *single parent household* (by 22%), *Hispanic* (by 50%) and *African American* (by 26%). On the other hand, young adults with higher educational levels had higher probabilities of reporting better general health.

Table 3. Odds Ratios /Coefficients for Confounders of Health outcomes and Household Assets Categories

Confounders	Good General Health OR [95% CI]	Obese OR [95% CI]	Depression[1] Coef. (*SE*)
Parental Level			
Education	0.990	0.963*	-0.061*
	[0.948,1.032]	[0.935,0.993]	(0.025)
Health status (ref.= fair)			
Good	1.203	0.705***	-0.057
	[0.922,1.569]	[0.596,0.833]	(0.188)
Poor	0.988	0.718	0.080
	[0.576,1.694]	[0.512,1.006]	(0.322)
Parental Household Level			
Welfare participation	0.715**	1.122	0.896***
	[0.562,0.910]	[0.971,1.296]	(0.126)
Family Structure (ref. = two biological parents)			
Others	0.781	1.010	0.653*
	[0.540,1.129]	[0.795,1.282]	(0.294)
Single parent	0.777*	1.020	0.174
	[0.632,0.955]	[0.882,1.180]	(0.121)
Two parents one biological	0.956	0.942	0.165
	[0.729,1.255]	[0.794,1.118]	(0.170)
Household size	1.025	0.956	0.039
	[0.972,1.080]	[0.913,1.001]	(0.036)
Young adult Level			
Race (ref.= white)			
Hispanic	0.503***	1.194	0.389
	[0.382,0.663]	[0.984,1.450]	(0.232)
Black	0.738*	1.471***	0.419*
	[0.563,0.968]	[1.301,1.663]	(0.165)
Asian	0.613	0.734	0.838***
	[0.296,1.268]	[0.488,1.103]	(0.240)
Native American and Others	0.818	0.986	0.580
	[0.501,1.336]	[0.697,1.396]	(0.296)
Male	0.915	1.087	0.739***
	[0.766,1.093]	[0.974,1.213]	(0.099)
Age	0.966	1.046*	0.022
	[0.907,1.030]	[1.009,1.085]	(0.036)
Self-perceived intelligence	1.003	1.043	-0.082
	[0.896, 1.122]	[0.978,1.112]	(0.053)
Income level (ref. = low)			
Moderate	1.183	1.063	-0.700***
	[0.977,1.434]	[0.898,1.258]	(0.143)
High	0.692	0.903	-0.946***
	[0.368,1.301]	[0.624,1.307]	(0.263)
Educational level (ref. = High school and less)			
Some college	1.534***	1.112	-0.652***
	[1.219,1.930]	[0.961,1.287]	(0.136)
College graduate	3.771***	0.644***	-1.150***
	[2.519,5.645]	[0.518,0.802]	(0.168)
Some graduate school or above	3.492***	0.540***	-1.228***
	[2.192,5.562]	[0.433,0.673]	(0.174)
Married/cohabitating	1.101	1.160*	-0.617***
	[0.898,1.350]	[1.013,1.330]	(0.115)
Constant	8.967***	0.400*	6.653***
	[2.767,29.061]	[0.196,0.817]	(0.709)
Observations	14,779	14,779	14,779

Note. [1]All other models were logistic regression models except the model for depression, which used ordinary least square regression. 95% CI are in brackets; Linearized SE are in parentheses; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Regarding the obesity of young adults, we found three significant predictors of a lower probability of obesity: *parental education, good health* and young adults' educational attainment at the *college education* level. In contrast, we found four significant predictors of higher probability for obesity. One predictor was on the parental level of *education*, with a lower level of education predicting a higher probability of obesity. The other three predictors were on the young adult level: *age, married or cohabiting, and African American.*

A number of variables were negatively and significantly associated with young adults' depression, including *parents' high educational* level, young adult's moderate or high income levels, young adult's postsecondary educational levels, and *married or cohabiting marital status.* Conversely, young adults raised in household experienced *welfare participation* and being *African American, Asian* or *other* races were more likely to experience depression.

Household Net Worth Effects on Health

Based on the basic model (See Table 4), participants with neutral net worth had significantly higher probabilities of reporting better general health than those who with negative net worth. However, no significant differences were found between those two groups regarding the probability of obesity or depression. Nevertheless, those with positive net worth had significant higher probabilities of reporting better general health, lower probabilities of obesity, and lower levels of depression than those who had negative net worth.

Table 4. Weighted Results1 of Health Outcomes by Household Net Worth Categories, Add Health, 2008-2009

Dependent variables	**Categories** (Ref. = *Negative*[2])	**Basic model** OR [95% CI]	**Full model** OR [95% CI]
Good General Health (1=Excellent/very good/good; 0=Fair/poor)	Neutral	1.345* [1.073,1.686]	1.570*** [1.251,1.970]
	Positive	2.080*** [1.734,2.496]	1.822*** [1.493,2.223]
Obese (BMI: > 30)	Neutral	0.925 [0.771,1.109]	0.823* [0.685,0.990]
	Positive	0.822** [0.727,0.929]	0.853* [0.747,0.975]
	Categories (Ref. = *Negative*[2])	**Basic Model** Coef. (*SE*)	**Full Model** Coef. (*SE*)
Depression (CES-D)	Neutral	-0.245 (0.218)	-0.384 (0.197)
	Positive	-1.642*** (0.148)	-1.276*** (0.150)

Note. [1] Basic model with no controls (n = 14,800); Full model controls for sociodemographic, socioeconomic variables at parental, parental household, and young adult levels (n = 14,777); [2] Reference group consists of those who would still be in debt after liquidating all assets to pay existing debts (i.e., negative net worth); 95% CI are in brackets; Linearized SE are in parentheses;*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Similar to the household assets models, the full net worth models showed significantly higher rates of better general health reported by young adults whose net worth was either neutral (by 57%, $p < 0.001$) or positive (by 82%, $p < 0.001$). For obesity, we found significantly lower probabilities of obesity for adults whose net worth was either neutral (by 18%, $p < 0.05$) or positive (by 15%, $p < 0.05$). The same trend was also found for lower levels of depression among

young adults whose net worth was either neutral (β = -0.38) or positive (β = -1.28). However, we found statistically significant differences between the negative and positive net worth groups ($p < 0.001$) whereas differences between the negative and neutral net worth groups did not reach significance ($p > 0.05$).

Table 5 Odds Ratios /Coefficients for Confounders of Health outcomes and Household Net Worth Categories

Confounders	Good General Health OR [95% CI]	Obese OR [95% CI]	Depression[1] Coef. (*SE*)
Parental Level			
Education	0.995	0.962*	-0.055*
	[0.954,1.038]	[0.934,0.992]	(0.025)
Health status (ref.= fair)			
Good	1.218	0.703***	-0.073
	[0.927,1.600]	[0.594,0.832]	(0.187)
Poor	1.003	0.715	0.023
	[0.574 , 1.753]	[0.511 ,1.000]	(0.329)
Parental Household Level			
Welfare participation	0.713**	1.111	0.813***
	[0.563 ,0.903]	[0.959, 1.288]	(0.126)
Family Structure (ref. = two biological parents)			
Others	0.784	1.004	0.651*
	[0.552,1.113]	[0.789,1.276]	(0.285)
Single parent	0.771*	1.017	0.136
	[0.628,0.946]	[0.878, 1.177]	(0.116)
Two parents one biological	0.961	0.937	0.139
	[0.731,1.264]	[0.788,1.113]	(0.174)
Household size	1.019	0.956	0.042
	[0.967,1.075]	[0.914,1.001]	(0.035)
Young Adult Level			
Race (ref.= white)			
Hispanic	0.491***	1.204	0.378
	[0.371,0.649]	[0.992,1.460]	(0.232)
Black	0.710**	1.480***	0.406*
	[0.547,0.920]	[1.307,1.675]	(0.157)
Asian	0.602	0.740	0.852***
	[0.290 - 1.248]	[0.493,1.111]	(0.237)
Native American and Others	0.849	0.978	0.527
	[0.517,1.396]	[0.692,1.384]	(0.285)
Male	0.892	1.092	0.757***
	[0.747,1.064]	[0.978,1.220]	(0.098)
Age	0.963	1.048*	0.037
	[0.904,1.025]	[1.011,1.086]	(0.035)
Self-perceived Intelligent	1.008	1.041	-0.087
	[0.901,1.129]	[0.977,1.110]	(0.052)
Income level (ref. = low)			
Moderate	1.238*	1.060	-0.742***
	[1.023 - 1.497]	[0.899,1.249]	(0.148)
High	0.773	0.900	-0.896***
	[0.411,1.456]	[0.626,1.292]	(0.263)
Educational level (ref. = High school and less)			
Some colleges	1.579***	1.105	-0.677***
	[1.259,1.980]	[0.955,1.280]	(0.130)
College graduate	4.012***	0.637***	-1.204***
	[2.679,6.007]	[0.512,0.792]	(0.158)
Some graduate school and above	4.010***	0.524***	-1.398***
	[2.508,6.411]	[0.420,0.653]	(0.167)
Married/cohabitating	1.129	1.160*	-0.640***
	[0.922,1.382]	[1.014,1.329]	(0.114)
Constant	7.574***	0.438*	6.891***
	[2.334,24.584]	[0.210,0.914]	(0.693)
Observations	14,777	14,777	14,777

Note. [1]All other models were logistic regression models except the model for depression, which used ordinary least square regression.
95% CI are in brackets; Linearized SE are in parentheses; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Confounders. Table 5 demonstrated the effects of confounders on health outcomes as predicted by household net worth categories. Four variables were significantly associated with higher likelihood of reporting good general health. The variables with the highest significance were *college graduate* and *some graduate school or above*, both of which increased the likelihood of reporting good general health by 301%. The other two variables were young adults' with *moderate income,* which increased likelihood by 24% and *some college, which increased likelihood by* 58%. Conversely, we found four significant predictors of lower probability for good general health: *household had ever received welfare assistance* (by 29%), *single parent household* (by 23%), *Hispanic* (by 51%) and *African American* (by 29%).

Regarding the obesity of young adults, we found four significant predictors of a lower probability of obesity: *parental education and good health* status and young adults' educational level at the *college level* and *some graduate school level or above*. In contrast, we found three significant predictors of higher probability of obesity: *African American, young adult's age,* and *married or cohabiting marital status*.

A number of variables negatively and significantly associated with young adults' depression: *parents' high education* level, young adult's income at either the *moderate* or *high* level, postsecondary educational level and married or cohabiting *marital status.* In contrast, household *welfare participation* or *other family structure*, *African American*, *Asian*, and *male were positively associated with depression of young adults.*

DISCUSSION

This study shows the independent association between household assets and young adult's health outcomes after controlling other socioeconomic factors. The findings are consistent with previous studies conducted among children and adolescents (Huang 2011; Kafle & Jolliffe 2015), while this study expands the evidence on the population of young adulthood that is scarcely studied by predecessors. Moreover, this study categorized household assets into three levels to explore the associations with young adult's general health, obesity and depression. The comparison of relationships with health outcomes among each assets group allows us to reveal the gradient effect of assets, while the evidences from multiple domains of health buttress our conclusions on positive associations between high levels of assets and better health outcomes.

In addition to assets, this study also examined the association between the debt and health outcomes by using the other key predictor of net worth. Interestingly, household assets were associated with young adult's general health and depression but not obesity, whereas the measure of net worth were significantly associated with all three health indicators. The plausible explanation is that young adult's obesity could be more sensitive to the debt effect than to the total assets effect. In this sense, this study is a contribution as finding a more nuanced factor for understanding health and mental health outcomes and disparities in the context of household financial resources. Future studies focusing on the role of debt are highly needed for the research on social determinants of health.

The findings from confounders are also interesting. In general, our findings are consistent with that of traditional SES studies (Beach et al., 2016; Braveman, Cubbin, Egerter, Williams, & Pamuk, 2010; Kawachi, Adler, & Dow, 2010), suggesting higher parental educational level, individual education achievement and decent income are protective factors for health; whereas being raised in a single parent household or household living in poverty, and being African American are risk factors. However, our finding indicating worse general health reported among

Hispanic young adults is actually contrary to the other studies of "Hispanic paradox" (Borrell, 2005; CDC, 2015). Hispanic paradox speaks to the better health outcomes among Hispanic population compared to their non-Hispanic White counterparts though they are in the low socio-economic status. In this sense, the different finding in our study from that of "Hispanic paradox" reveals the potential complicated association with assets and debt being involved in this phenomenon. The other possible explanation for this counter-Hispanic paradox finding is the sampling issue. The Hispanic population in our sample are young Latino adults whose lifestyles might be highly Americanized and their health bonus from ethnic uniqueness have been gradually fading away. Future research on social determinants of health should further explore the factors of household assets, debts and generational issues among Hispanic population.

Several limitations need to be acknowledged. First, the data collected for measuring household assets are categorical rather than specific assets values, which may not accurately capture the variances of health outcomes. Meanwhile, the measure of net worth is actually a subjective perception of participations, so our findings should be interpreted cautiously since conclusions may vary if an objective measure were employed. Secondly, both key dependent variables and independent variables came from Wave IV, which made this study a cross-sectional study. Thirdly, given that there was no control variable of living arrangement, we are not able to distinguish adults living with family from those who live independently, which may result in different estimations.

This study has several strengths. First, the study used a nationally representative dataset with a large sample, which allows us to generalize our findings to the larger population. Second, this study incorporated two measures of household financial resources (i.e., assets and net worth), and considered multiple domains of young adults' health outcomes (i.e., general health, obesity, and depression), which can provide nuanced understanding of the relationship between household financial assets and health status among young adults. The study findings enhance the current literature and help to fill the research gap by elucidating the relationship between household assets and health disparities. For future study, we suggest the development of standardized measurements of assets and net worth to enable meaningful comparisons across studies.

CONCLUSION

Guided by the framework of social determinants of health, this study connects health promotion with poverty alleviation to address the grand challenge of closing the health gap. Given that both assets and debts are related to all dimensions of young adults' health, a better understanding of different forms of financial resources (e.g., income, assets, and debt) and their dynamic relationships with health outcomes will contribute to developing effective asset-based interventions. Particularly, current policy and practice should not only pay attention to increasing wealth by building assets, but also consider the importance of resolving and clearing debt in formulating and implementing health-related policies and programs.

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