The Pilot Study of Life Course Perspectives on The Links Between Social Mobility and Obesity

35-Year Follow-up in the Wisconsin Longitudinal Study

Chih-Chien Huang
Arizona State University

Abstract

This pilot study analyzes the impact of childhood SES on midlife obesity and extends existing research by estimating the influence of intergenerational social mobility on midlife obesity. It also provides the evidence of childhood obesity effects on SES during midlife. By using the Wisconsin Longitudinal Survey, this pilot study considers three hypotheses: (1) There are lasting effects of childhood SES on midlife obesity, (2) there are mediating effects of social mobility on midlife obesity and (3) there are lasting effects of childhood obesity on midlife SES. This study found that a father's education has lasting effects on female obesity. Women who experienced upward social mobility in education have higher risk of obesity. Obesity was found to have lasting effects on education in women and lasting effects on income in men.

Keywords: Socioeconomic Status, social mobility, life course, obesity

INTRODUCTION

Life Course Approaches

The life course approach provides us with a perspective into how socioeconomic status (SES), acting over a lifetime, might affect health and the risk of obesity. It affirms the relative importance of influences at different stages varies for the cause of obesity.

Heslop, Smith, Macleod and Hart (2001) indicated that there were only a few studies that examined the cumulative effect of one's socioeconomic position throughout their life course. The conventional measurements of socioeconomic position, estimated at one point in time, does not adequately capture the effects of socioeconomic circumstances on the risk of obesity. Glass, Haas, and Reither (2010) indicated that it was not an option to rely on cross-sectional data without tracing the cumulative effects of weight over the life course. Davey Smith, Hart, Blane, Gillis, and Hawthorne (1997) also pointed out that most studies with data on socioeconomic circumstances at only one stage of life were inadequate for fully elucidating the contribution of socioeconomic factors to health. In short, a broader range of explanatory factors for the body weight differentials than currently exists must be considered. Life course approach serves us a framework to understand the influence of socioeconomic factors on obesity during transitions from childhood into midlife. By tracking socioeconomic status from a point in their childhood to their later life stages, this study will gain insight into the mechanisms that operate between SES and obesity throughout people's life course.

Causality: The attenuated effects of upward social mobility on obesity

Using the Medical Research Council's national survey of health and

development data to evaluate how childhood circumstances influence adult obesity, Langenberg, Hardy, Kuh, Brunner, and Wadsworth (2003) found that people who had a higher occupational category than their father (people who experience upward social mobility), had less risk of obesity at age 53 than those whose socioeconomic status remained low; using the data set of people were born in England, Scotland, and Wales in 1946 with a 53 years follow-up. This conclusion was consistent with the Braddon, Rodgers, Wadsworth, and Davies' (1986) study, which indicated that females who experienced upward social mobility had less risk of obesity at the age of 36 using the same data set.

Most studies have only shown the cumulative effects of socioeconomic status on adulthood obesity without estimating the upward and downward effects of social mobility, and only very few studies have investigated the relationship of intergenerational social mobility and obesity (Ball & Mishra, 2006). Ball and Mishra (2006) used the Australian Longitudinal Study on Women's Health (ALSWH) data to assess the change in weight of the participants over a 4 year period. They pointed out that the attenuated effects on people who experienced upward social mobility. However, their study was insufficient in helping to reflect the cumulative effects of socioeconomic status on obesity over the life course. A longer follow-up period should be taken into account in order to evaluate a greater distinction in the relationship between social mobility and body weight across the life course.

Though, limited, prior research suggests that social mobility may underlie the relationship between socioeconomic status and body weight change over the life course. This study assumes that people who experienced upward social mobility had potential reversibility of early life disadvantage.

Selection Process: The lasting effects of obesity on upward social mobility

While most scholars are focused on documenting the lasting influence of childhood socioeconomic status on obesity, the research on the inverse relationship that obesity has with later life socioeconomic status is also relatively insufficient. Most researches are focused on comparing the relationship between obesity and earnings, examining the effect of obesity on wages, and how people experience a persistent obesity affecting wage penalty on their careers (Cawley, Grabka & Lillard, 2005; Baum & Ford, 2004). We know very little about how obesity during adolescence impacts socioeconomic status over the life course.

Previous studies have shown that obesity was reported as more highly stigmatized in women than in men, and that obesity could limit the upward social mobility more for women than for men (Finkelstein, Ruhm & Kosa, 2005). It is important to provide the information of gender-specific social mobility to evaluate how childhood socioeconomic inequality underline the different genders' body weight in adulthood, and also investigate how obesity limits upward social mobility according to gender differences.

Hypotheses

Given these finding I predict the following:

The childhood SES has lasting effects on obesity

Hypothesis *1a:* *The lower childhood SES in 1957, the greater the risk of obesity during adolescence in 1957.*

Hypothesis *1b:* *The lower childhood SES in 1957, the greater the risk of obesity during midlife in 1992*

There are mediating effects of social mobility on midlife obesity

Hypothesis *2:* *One who experienced upward social mobility has less risk of obesity*

There are lasting effects of childhood obesity on midlife socioeconomic status.

Hypothesis 3: *Obesity adolescence has adverse effects on SES in midlife*

METHODS

Wisconsin Longitudinal Study

Data

The WLS, a large longitudinal study of American adolescents, is a long-term, study of a random sample of 10,317 people from adolescence into adulthood, who graduated from Wisconsin high schools in 1957(Sewell, Hauser, Springer & Hauser, 2004). It provided the first large-scale opportunity to study the life course from late adolescence through their 60s, within the context of a complete record of ability, aspiration, and achievement. The WLS has now been following the lives of its participants for nearly 5 decades, having collected survey data from the original respondents or their parents in 1957, 1964, 1975, 1992, and 2004. As a result, The WLS has long been a central source of data on the processes of socioeconomic attainment.

Although the WLS is not nationally representative, its participants resemble over two-thirds of Americans that are entering retirement age, in terms of academic achievement and ethnic background. The WLS is ideal for testing the impact of childhood SES on adolescent obesity, and adolescent obesity on midlife SES.

Variables and Measurement

Independent Variables

Childhood Socioeconomic Status. Table 1 presents the definition and coding variables this study uses in the analysis. Childhood SES was categorized based on the father's occupation, education, and family income in 1957, when the participants were in their teens.

The father's occupation was available for 82.03% of respondents; father's education was available for 97.54 % of respondents; mother's education was available for 98.86% of respondents; family income was available for 88.52% of the respondents.

[Table 1]

"*Unskilled occupation*" was assigned to responses of student, housewife, unemployed, or those who did not report an occupation. Blue-collar occupations such as farmer, farm manager, laborer, private household worker and service worker, kindred worker, craftsman, clerical, sales, or proprietor were assigned to "*manual occupation*". White-collar occupations; including military commissioned officers, mangers, officials were reported as father had "*non-manual or professional occupation*"

Years of parent education originally were reported as continuous variables. For purpose of the analyses, categories were created to respond to different levels of certification: *low education* (<12 years), *medium education* (12-16 years), and *high education* (>16 years). Family income was reported as a continuous variable. From 1957 to 1960 the exact dollar income values were average family income in hundreds. For purpose of the analyses, categories were created to respond to different levels of certification: *low income* (family income in 1957 was % of bottom third), *medium*

income (family income in 1957 was % of mid third), and *high income* (family income in 1957 was % of top third)

Adulthood Socioeconomic Status. Adulthood SES was categorized based on respondent occupation, education, and income which is derived from 1992 data, while the participants were in their 50's. Respondent occupation was available for 94.87%; respondent education was available for 95%; respondent income was available for 95 %. "*Unskilled occupation*" was assigned to respondents that were students, homemakers, unemployed, or did not report their occupation. Participants with blue-collar occupations such as farmer, farm manager, laborer, private household worker, service worker, operative, kindred worker, craftsman, clerical, sales, or proprietor were assigned to "*manual occupation*". Participants that had white-collar occupations, including military commissioned officers' mangers; officials were reported as "*non-manual or professional occupation*"

Participants' years of education originally were reported as continuous variables. For purposes of the analyses, categories were created to suit the respondent to levels of certification: low education (<12 years), medium education (12-16 years), and high education (>16 years). Incomes were reported as a continuous variable. During 1992, the exact dollar income values were average income in hundreds. For purpose of the analyses, categories were created to respond to different levels of certification: *low income* (personal income in 1992 was % of bottom third), *medium income* (personal income in 1992 was % of mid third), and *high income* (personal income in 1992 was % of top third)

Intergenerational mobility. A variable for intergenerational mobility with respect to parental education levels was created to reflect consistency or change in education level from father to daughter (or son) according to the following transition:

low education for both, medium education for both, high education for both. *Upwardly mobile*: Low education/occupation (father) to medium or high education/occupation (participant), medium education/occupation (father) to high education/occupation (participant). *Downwardly mobile:* High education/occupation (father) to medium or low education/occupation (participant) and medium education/occupation (father) to low education/occupation (participant).

Table 2 shows the social mobility population in education consisted of 92.05 % men and 92.71 % women. In 1992, 71.43 % of men and 67.38% of women were upwardly mobile; 27.44% of men's and 30.47% of women's educational attainment was the same as their fathers; and there were only 1.13% of men and 2.15% of women that were downwardly mobile. Table 3 shows that the social mobility population for occupations consisted of 73.6 % men and 80.2 % women. In 1992, 52.41 % of men and 37.61% of women were upwardly mobile; 42.64 % of men's and 50.72 % of women's educational attainment was the same as their fathers; and there were only 4.95 % of men and 11.67% of women that were downwardly mobile.

[Table 2]

[Table 3]

Dependent Variables

Relative Body Mass (RBM): Obesity status in 1957. WLS did not collect data on height or weight either at baseline (1957) or in a subsequent wave in 1975; this limits its potential contributions to research on adult health and other consequences of early life characteristics and conditions (Reither, Hauser, & Swallen, 2009) In 2005, a team of six graduate students at the University of Wisconsin-Madison coded the senior yearbook photographs of 3,027 participants in the Wisconsin Longitudinal Study (WLS) for "relative body mass" (RBM), a proxy for BMI. For every

photograph, coders recorded a RBM score ranging from one to eleven. The RBM scores of individual coders may be used to assess the reliability and validity of the RBM scale and also for latent variable modeling. This RBM scale has removed the obstacle impeding obesity research and lifelong analysis of health in the WLS. The 1957 database will use RBM as the obesity indicator, this is not based on weight and height, but the photos of the participants (Reither, Hauser, & Swallen, 2009)

SRBMI was calculated separately for male and female photos by (1) generating coder-specific z-scores, (2) summing the z-scores across coders and (3) dividing the sum of z-scores by the number of coders in the study. It is standardized relative body mass index.

$$\text{SRBMI}_{jk} = \frac{\sum_{i=1}^{n}[(x_{ijk} - \bar{x}_{ik}) / s_{ik}]}{n}$$

i is an individual coder, *n* is the number of coders in the study, *j* is one of the 3,027 WLS participants, *k* is the participant's gender, and x_{ijk} is the series of RBM scale scores for coder *i* and participant *j* of gender *k*, with mean $\bar{x}_{ik}$ and standard deviation s_{ik} (Reither, Hauser and Swallen, 2009). According to Reither, Hauser, and Swallen (2009) as SRBMI > 90th percentile were overweight; 80th > SRBMI > 90th percentile were at risk for being overweight; 10th > SRBMI > 80th percentile is at a healthy weight; underweight was defined as at or below the 10th percentile. In this study the researcher has divided obese status in 1957 into two categories: *Obese* (SRBMI≧1) and *Not Obese* (SRBMI < 1)

Body Mass Index (BMI) in 1992. 1992 the WLS recorded participant BMI percentiles by using their weight, height, and assessed BMI (kg/m) from self-reports of height and weight in 1992. Center for Disease Control and Prevention (CDC)

growth charts were used calculating weight in kilograms divided by height (in meters) squared. Underweight meant at or below the 5th percentile; healthy weights were between the 5th and 85th percentiles, those at risk for being overweight were between the 85th and 95th percentiles, and the overweight were at or above the 95th percentile (Ogden, Flegal, Carroll, & Johnson, 2002) BMI was divided into standard categories for *underweight* (BMI<18.5), *low normal weight* (18.5≤BMI<25), *high normal weight* (25≤BMI<30) and *obese* (BMI≧30). In this study, the researcher calculated with weight in kilograms divided by height in meters squared and classified into two categories: *Obese* (BMI≧30) and *Not Obese* (BMI <30). Obese was defined as the top 15th percentile.

RESULT

Weight changed by Gender and Age. Since WLS in 1952 doesn't have subject weight information, we can only compare the distribution of two indicators, SRBMI and BMI. Figure 1 shows the prevalence of obesity at the 1957/1992 wave of data collection in the WLS by gender and years group. The RBMI/BMI slopes represent the RBMI/BMI amounts after a 35 year follow up of the WLS. The percentages of obesity increased substantially for both men and women; men seem to have a higher risk of obesity in both their childhood and adulthood. In 1957, the male level of obesity was 13.9% while the female level of obesity was 12.7%; in 1997, the male level of obesity was 27.9; and the female level was 19% obesity.

[Figure 1]

Socioeconomic Status and Obesity. The samples used in this analysis comprised participants that responded to both the baseline (1957) and follow-up (1992) questionnaire. Tables 4 and 5 provide the baseline distribution of variables

used in the analysis for each of the gender groups. In 1957, the majority of occupations held by the father were manual jobs (males 70.9%; females 73.5 %); most father's education levels were below 12 years (males 64.1%, females 63.2%). In 1992, males with manual jobs were 52.3%; while those with non-manual jobs represented 47.5%; female were 57.1% and 35.2% respectively. Men were more likely to report non-manual jobs (white collar jobs) than women, and men were more likely to have educations above 16 years than women.

Table 4 shows the mean and standard deviation calculated for the male and female RBMI levels in 1957 and BMI levels in 1992 by their father's educational level, their father's occupational status, and family income level. Table 5 shows mean and standard deviation calculated for male and female BMI levels in 1992 by their own educational level, occupational status and personal income level. All measures of socioeconomic status were significantly associated with female RBMI/BMI except father's occupation status (*p*-value=.362). Women whose fathers had lower educational levels had a higher risk of obesity, during both childhood and adulthood. The results indicate that both childhood and adulthood socioeconomic status are important, and the associations differ from socioeconomic status for female obesity risk, but not for male. Measures based on the father's education was a more consistent predictor of female childhood RBMI and adulthood BMI, and own education was consistent predictor of a female's current BMI. All those factors were not significant for males' obesity.

[Table 4]

[Table 5]

Table 6 shows the mean and standard deviation calculated for male and female BMI levels in 1992 by their upward, downward and static social mobility in education

and occupation. All measures of social mobility were significantly different in female BMI, but not in male. However, this research also suggests that women who experienced upward social mobility in education had highest mean of BMI, which was inconsistent with this researcher's hypothesis.

[Table 6]

Table 7 further presents the change in obesity status by the intergenerational educational/occupational mobility. *Become obese* (No obese→ Obese) means the participant was not obese in 1957 but was obese in 1992. *Stay Obese* (Obese→ Obese) means the participant was obese in 1957 and also obese in 1992. *Reduce obese* or *stay non-obese* (Obese→ No obese; No obese→ No obese) means the participant was obese at 1957 and but not obese in 1992 or not obese in 1957 and not obese in 1992. It also showed that upward social mobility in education didn't decrease the risk of obesity in both men and women.

[Table 7]

Logistic Regression-Effect of Childhood and Adulthood SES on Midlife Obesity. Table 8 presents the logistic regression analysis of the childhood and midlife SES variables on obesity. Results are presented in terms of the log-odds, which show that every unit change in the independent variable effects the log-odds of the dependent variables. In these models, the odds ratio represents the odds of having obesity versus the odds of not having obesity during adolescent and midlife periods. The logistic regression model showed that both the father's occupation during the offspring's childhood and adulthood was associated with women's obesity. The log-odds of having obesity for females whose fathers had manual occupation are .499 less than the log-odds of females whose fathers had an unskilled occupation after controlling adulthood SES. In other words, a father's occupation during a woman's

childhood had a long term effect on the woman's midlife obesity. Fathers that had non-manual occupations showed no significant effects on obesity, but we must remember the group of fathers that had non-manual occupations was a small portion of the sample, so they have presented uncommon SES patterns and obesity outcomes in 1957. In addition, women who experienced upward social mobility in education were positively associated with obesity. However, after controlling childhood and adulthood SES, there were no significant effects on women's obesity from educational shifts.

On the other hand, among men who had high income, the log-odds of being obese decreased by .451 compared to low the income group, after controlling social mobility in both education and occupation, the effects were still significant. However, income has no effect on female obesity. Also, for each score increase in men's IQ test in 1952, the log-odds of being obese in 1992 increased by .01 in Model 2, 4 and 5; increasing the risk of obesity by 1% {[exp(.01)*100]-1=1}. IQ had no effects on female obesity. After controlling the childhood/adulthood SES and social mobility, there was still significant effect of IQ on male obesity.

There were no significant effects of midlife occupation on either men or women, which mean that midlife occupation was no different from medium to high education in terms of obesity.

[Table 8]

The Effects of Childhood Obesity Status on Adult SES. By using linear regression, Model 1, Table 9 shows that compared to overweight male adolescents, underweight male adolescents increased their income by 9.5 hundred dollars in 1992. After controlling the childhood SES, the effect was still significant. However, there

was no significant relationship between female SRBMI and their midlife income according to Model 3 and Model 5. Model 7 shows that there were gender differences in education achievement by SRBMI stratification. Underweight female adolescents increased their education accomplished by .707 years compared to overweight (obese) females. Females that had low normal weights during their adolescence increased their education by .6 years compared to overweight (obese) females. After controlling their childhood SES, there was still a significant relationship between female SRBMI and their completed education. On the contrary, there are no effects of SRBMI on male education levels. The multinomial logistic model's outcome shows that the odds of a female with low normal weight are 1.412 times the odds of an overweight female to have a manual occupation. Since there were no other significant effects of SRBMI on one's obesity, this study did not provide the multinomial logistic model outcome.

[Table 9]

DISCUSSION

The results suggest that there are lasting effects of childhood socioeconomic status on female weight status during the ages of 17-20 and 52-55. The father's occupation may be the most important factor in influencing a women's weight during their life. This pattern supports that low childhood socioeconomic status was associated with greater risk for female obesity but not for male. Adult socioeconomic status was important for male obesity risk, but not for female. Also, male income was predictive for their obesity.

This study has provided the evidence that social mobility has a mediating effect on obesity while pointing out that upward social mobility in education had effects on male obesity after controlling for childhood and adult SES. However, educational social mobility had positive effects on female obesity, but there were no effects after

controlling female childhood and adult SES. This study was inconsistent with the researcher's assumption that indicated upward social mobility would decrease the risk of obesity.

This study has found that there is direct influence of adolescent body mass on midlife socioeconomic status. Specifically, adolescent obesity negatively impacted female education accomplished and also slightly impacted female income. Furthermore, obesity in male childhood has a slight effect on their midlife income, but there was no evidence of the relationship between the obesity in male childhood and their educational and occupational achievements in their 50's.

This study provides an important insight into how socioeconomic status affects risk of obesity, and also illuminates how obesity impacts their later life socioeconomic status by taking social mobility into account. This research has demonstrated that lower childhood SES leads to greater obesity among women throughout their life, and obesity also leads to lower social status among women after 35 years. It implies that causal and selection effects have an important impact on females but not males. However, by considering how social mobility mediates the effects on obesity, we found significant effects of social mobility on obesity outcomes for both males and females. Unfortunately, the theoretical structure that would describe how a social mobility mechanism would impact people's obesity has yet to be developed.

There were some restrictions on this study. First, the survey didn't provide participant weight and height information in 1957; therefore, we couldn't evaluate weight change throughout their life course. Secondly, since the sample was Wisconsin high school graduate students, we could assume that it might partly be a result of a selection bias (most of the samples experienced upward social mobility), that may cause a loss of the important information of lower social class socioeconomic status

effects on obesity. Thirdly, the majority of the sample was white; therefore, we have no information about how race differences underline health inequality with regards to socioeconomic status. This study does not have enough data points to show how race, gender and SES interact with obesity, which is very important for understanding the U. S. society where culture, race, and financial disparity is very diverse.

REFERENCES

Ball, K., & Mishra, G. D. (2006). Whose socioeconomic status influences a woman's obesity risk: Her mother's, her father's, or her own? *International Journal of Epidemiology, 35*(1), 131-138.

Baum, C. L., & Ford, W. F. (2004). The wage effects of obesity: A longitudinal study. *Health Economics, 13*, 885-899.

Braddon, F. E., Rodgers, B., Wadsworth, M. E., & Davies, J. M. (1986). Onset of obesity in a 36 year birth cohort study. *British Medical Journal, 293*(2), 299-303.

Cawley, J., Grabka, M. M., & Lillard, D. R. (2005). A comparison of the relationship between obesity and earnings in the U.S. and Germany. *Journal of Applied Social Science Studies, 125*(1), 119-129.

Davey-Smith, G., Hart, C., Blane, D., Gillis, C., & Hawthorne, V. (1997). Lifetime socioeconomic position and mortality: Prospective observational study. *British Medical Journal, 314*, 547.

Finkelstein, E. A., Ruhm, C.J., & Kosa, K. M. (2005). Economic causes and consequences of obesity. *Annual Review of Public Health, 26*, 239-257.

Glass, C. M., Haas, S., & Reither, E. N. (2010). The skinny on success: Body mass, gender and occupational standing across the life course. *Social Forces, 88*(4), 1777-1806.

Heslop, P., Davey-Smith, G., Macleod, J., & Hart, C. (2001). The socioeconomic position of employed women, risk factors and mortality. *Social Science and Medicine, 53*(4), 477-485.

Langenberg, C., Hardy, R., Kuh, D., Brunner, E., & Wadsworth, M. (2003). Central and total obesity in middle aged men and women in relation to lifetime socioeconomic status: Evidence from a national birth cohort. *Journal Epidemiol Community Health, 57*, 816-822.

Ogden, C. L., Flegal, K. M., Carroll, M. D., & Johnson, C. L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *The Journal of the American Medical Association, 288*, 1728-1732.

Reither, E. N., Hauser, R. M., & Swallen, K. C. Predicting adult health and mortality from adolescent facial characteristics in yearbook photographs. *Demography, 46*(1), 27-41.

Sewell, W. H., Hauser, R. M., Springer, K. W., & Hauser, T. S. (2004). As we age: A review of the Wisconsin Longitudinal Study, 1957-2001. In K. T. Leicht (Ed.), *Research in social stratification and mobility* (pp. 3-114). New York: Elsevier.

Table 1 Definition and Coding of Variables

Definition and Coding of Variables

Variables	WLS Source Variable Code	Measure	Definition and Coding
Father's Occupation	ocf157	Unskilled	1 if respondent's father's occupation in 1957 is student, housewife, unemployed, or occupation not reported; 0 otherwise
		Manual	1 if respondent's father's occupation in 1957 is blue-collar occupations, such as farmer, farm managers, laborers, private household workers and service workers; operatives and kindred workers, craftsmen, clerical, sales, proprietors ; 0 otherwise
		Non-Manual	1 if respondent's father's occupation in 1957 is White-collar occupation, including military commissioned officers mangers, officials ; 0 otherwise
Father's Education	edfa57q	Low Education	1 if respondent's father's education in 1957 was between 0-11 years; 0 otherwise
		Medium Education	1 if respondent's father's education in 1957 was between 12-16 years; 0 otherwise
		High Education	1 if respondent's father's education in 1957 was between 17-27 years; 0 otherwise
Family Income	pi5760	Low Income	1 if the family income in 1957 was % of Bottom third; 0 otherwise
		Medium Income	1 if the family income in 1957 was % of Mid Third; 0 otherwise
		High Income	1 if the family income in 1957 was % of Top Third; 0 otherwise
Henmon-Nelson IQ at 1954	gwiiq_bm	Henmon-Nelson IQ	Respondent's IQ scores up to 145

Table 1 Definition and Coding of Variables (Continued)

Definition and Coding of Variables			
Variables	**WLS Source Variable Code**	**Measure**	**Definition and Coding**
Occupation	rfu36jcf	Unskilled	1 if respondent's occupation in 1992 is student, housewife, unemployed, or occupation not reported; 0 otherwise
		Manual	1 if respondent's occupation in 1992 is blue-collar occupations, such as farmer, farm managers, laborers, private household workers and service workers; operatives and kindred workers, craftsmen, clerical, sales, proprietors ; 0 otherwise
		Non-Manual	1 if respondent's occupation in 1992 is White-collar occupation, including military commissioned officers mangers, officials ; 0 otherwise
Education	rb003red	Low Education	1 if respondent's education in 1992 is between 0-11 years; 0 otherwise
		Medium Education	1 if respondent's education in 1992 is between 12-16 years; 0 otherwise
		High Education	1 if respondent's education in 1992 is between 17-27 years; 0 otherwise
Income	rp015ree	Low Income	1 if the personal income in 1992 was % of Bottom third; 0 otherwise
		Medium Income	1 if the personal income in 1992 was % of Mid Third; 0 otherwise
		High Income	1 if the personal income in 1992 was % Top of Third; 0 otherwise
Relative Body Mass Index (RBMI)	srbmi	RBMI	Relative Body Mass based on respondent's photos
Body Mass Index (BMI)	mx011rec	BMI	Body mass index calculation based on respondent's weight and height

Table 2 Educational indicators of social mobility divided by gender

	Educational Level		Men(N=973)				Women(N=1208)			
MOBILITY	Father	Son/Daughter	n	%	Total	%	n	%	Total	%
Upward	Low	Medium	541	77.84	695	71.43	713	87.59	814	67.38
	Low	High	82	11.80			43	5.28		
	Medium	High	72	10.36			58	7.13		
Downward	High	Medium	11	100.00	11	1.13	26	100.00	26	2.15
	High	Low	-	-			-	-		
	Medium	Low	-	-			-	-		
Same	Low	Low	-	-	267	27.44	-	-	368	30.47
	Medium	Medium	251	94.01			359	97.55		
	High	High	16	5.99			9	2.45		

Table 3 Occupational indicators of social mobility divided by gender

	Occupational Level		Men(N=778)				Women(N=1045)			
MOBILITY	Father	Son/Daughter	n	%	Total	%	n	%	Total	
Upward	Low	Medium	66	15.98	413	52.41	80	20.36	393	37.61
	Low	High	63	15.25			44	11.20		
	Medium	High	284	68.77			269	68.45		
Downward	High	Medium	37	94.87	39	4.95	57	46.72	122	11.67
	High	Low	0	0.00			11	9.02		
	Medium	Low	2	5.13			54	44.26		
Same	Low	Low	0	0.00	336	42.64	17	3.21	530	50.72
	Medium	Medium	277	82.44			449	84.72		
	High	High	59	17.56			64	12.08		

Table 4 Mean RBMI at 1957 (standard deviation) for indicators of SES

	Adolescent Men				Adolescent Women			
socioeconomic status	**n**	**RBMI**	**F**	**p-values**	**n**	**RBMI**	**F**	**p-values**
FATHER's EDUCATION			1.677	0.188			12.342	<.001***
11 Years or less	662	.021(.822)			798	.068(.824)		
12 - 15 years	343	.021(.849)			429	-.149(.784)		
16 or more years	28	-.269(.57)			35	-.305(.77)		
FATHER's OCCUPATION			0.885	0.413			1.016	0.362
Unskilled	145	.079(.85)			152	-.027(.83)		
Manual	594	-.007(.80)			807	-.031(.80)		
Non-Manual	99	-.05(.85)			139	-.134(.77)		
FAMILY INCOME			0.005	0.995			3.708	<.05*
% Bottom Third	45	-.001(1.01)			59	-.032(.76)		
% Mid Third	190	-.004(.81)			187	.137(.84)		
% Top Third	689	.003(.82)			919	-.04(.81)		
	Midlife Men				**Midlife Women**			
socioeconomic status	**n**	**BMI**	**F**	**p-values**	**n**	**BMI**	**F**	**p-values**
FATHER's EDUCATION			0.706	0.494			8.084	<.000***
11 Years or less	519	27.73(3.78)			629	26.39(5.18)		
12 - 15 years	265	27.56(3.49)			339	25.29(4.50)		
16 or more years	21	26.86(3.40)			31	23.94(4.21)		
FATHER's OCCUPATION			1.047	0.315			0.874	0.418
Unskilled	100	27.17(3.38)			118	26.06(4.77)		
Manual	471	27.7(3.82)			631	25.98(5.14)		
Non-Manual	77	27.34(3.19)			106	25.31(4.61)		
FAMILY INCOME			0.091	0.913			1.347	0.261
% Bottom Third	38	27.47(3.39)			45	25.93(4.08)		
% Mid Third	142	27.75(3.8)			152	26.47(5.25)		
% Top Third	554	27.66(3.73)			724	25.75(4.96)		

Notes: †- p<.1; *- p≤ .05; **- p≤ .01; ***≤ .001

Table 5 Mean BMI at 1992 (standard deviation) for indicators of SES

Measures of socioeconomic status	Men				Women			
	n	BMI	F	p-values	n	BMI	F	p-values
OWN EDUCATION			1.044	0.307			5.282	<.05*
Year 11 or less	-	-			-	-		
Year between 12 and 15	681	27.67(3.70)			925	26.03(4.895)		
Year 16 or more	146	27.33(3.66)			103	24.85(5.37)		
OWN OCCUPATION			1.716	0.18			5.78	<.01**
Unskilled	2	31.50(.71)			74	25.65(4.34)		
Manual	429	27.74(3.72)			576	26.36(5.19)		
Non-Manual	396	27.46(3.65)			377	25.27(4.62)		
PERSONAL INCOME			1.471	0.23			2.742	<.1+
% Bottom Third	81	27.85(4.70)			497	26.25(5.01)		
% Mid Third	256	27.89(3.80)			376	25.76(4.88)		
% Top Third	490	27.43(3.42)			155	25.24(4.91)		

Notes: †- p<.1; *- p≤ .05; **- p≤ .01; ***≤ .001

Table 6 Mean BMI at 1992 for indicators of Social Mobility

		Men					Women				
		n	mean	SD	F	p-values	n	mean	SD	F	p-values
EDU	Upward	578	27.75	3.78	0.734	0.48	683	26.27	5.21	5.478	<.01**
	Downward	8	27.13	4.82			23	24.13	4.6		
	Same	218	27.42	3.36			293	25.31	4.27		
OCC	Upward	31	27.52	3.01	1.391	0.25	98	25.74	4.69	2.417	<.1+
	Downward	339	27.36	3.6			331	25.47	4.69		
	Same	277	27.86	3.84			425	26.27	5.32		

Notes: †- p<.1; *- p≤ .05; **- p≤ .01; ***≤ .001

Table 7 The crossable of obesity status and social mobility (variable description, means and percentages) deviation by sex

	Social Mobility							
	Education, n (%)							
	Men				Women			
	Same	Upward	Downward	Total	Same	Upward	Downward	Total
Not obese → Obese	48(28.1)	121(70.8)	2(1.2)	171(100)	37(25.2)	107(72.8)	3(2.0)	139(100)
Obese→ Not obese	19(32.8)	39(62.7)	-	58(100)	20(25.3)	57(72.2)	2(2.5)	44(100)
Not obese → Not Obese	145(27.6)	375(71.3)	6(1.1)	526(100)	242(31.9)	498(65.6)	19(2.5)	427(100)
Obese→Obese	10(17.5)	47(82.5)	-	57(100)	5(10.2)	44(89.8)	-	654(100)
	Occupation, n (%)							
	Same	Upward	Downward	Total	Same	Upward	Downward	Total
Not obese → Obese	59(42.4)	8(5.8)	72(51.8)	147(100)	73(55.3)	14(10.6)	45(34.1)	132(100)
Obese→ Not obese	14(31.8)	2(4.5)	28(63.6)	79(100)	27(42.9)	10(15.9)	26(41.3)	63(100)
Not obese → Not Obese	185(43.3)	20(4.7)	222(52.0)	759(100)	326(49.8)	69(10.6)	259(39.6)	654(100)
Obese→Obese	21(47.7)	2(4.5)	21(47.7)	44(100)	17(47.2)	7(19.4)	12(33.3)	36(100)

Table 8 Effects of Childhood and Adulthood SES on Obesity

	Men (N=1057)					Women(N=1303)				
	MODEL 1	MODEL 2	MODEL 3	MODEL4	MODEL 5	MODEL 1	MODEL 2	MODEL 3	MODEL4	MODEL 5
	Childhood SES	Adulthood SES	Social Mobility	Childhood and adulthood SES	Full	Childhood SES	Adulthood SES	Social Mobility	Childhood and adulthood SES	Full
Childhood socioeconomic circmustances										
FATHER'S OCCUPATION (R=Unskilled)										
Manual	0.007			0.035	.504+	-.527**			-.499**	-.213
Non-Manual	-.749			-.626	-.514	-.654			-.577	0.042
FATHER'S EDUCATION (R= <12years)										
12-16 years	0.121			-.166	0.21	0.083			0.079	0.089
17+ years	-.081			.-080	-.190	0.031			0.015	-.388
FAMILY INCOME IN 1957 (R=Low)										
Medium	-.070			-.070	-.131	0.043			0.045	-.109
High	-.019			-.040	.108	-.165			-.168	-.334
HENMON-NELSON IQ		.011+		0.011+	.010+		0.003		0.006	0.006
Adulthood socioeconomic circumstances										
OCCUPATION (R=Unskilled)										
Manual		-1.706		-1.618	-1.44		0.147		0.075	0.486
Non-Manual		-1.813		-1.731	-1.486		-.153		-.156	0.465
EDUCATION (R=12-16years)										
17+ years		-.211		-.179	-.405		-.231		-.152	-.307
INCOME IN 1992 (R=Low)										
Median		-.039		-.060	-.091		-.241		-.239	-241
High		-.422		-.451+	-.493+		-.119		-.125	-.119
SOCIAL MOBILITY (EDUCATION)										
Upward			0.172		.597+			0.495*		0.327
Downward			-.053		1.225			-.208		-.315
SOCIAL MOBILITY (OCCUPATION)										
Upward			0.189		0.277			0.186		0.617
Downward			-.051		-.053			-.200		-.230
Intercept	-.976***	0.001	-1.058	-.147	-.761	-1.225***	-1.64**	-1.749	-1.760**	-2.293**
-2 Log L	986.225	977.174	980.03	974.058	969.553	1022.212	1026.975	1023.776	1017.059	1014.428**

Note: Table presents regression coefficients and t-values in parentheses

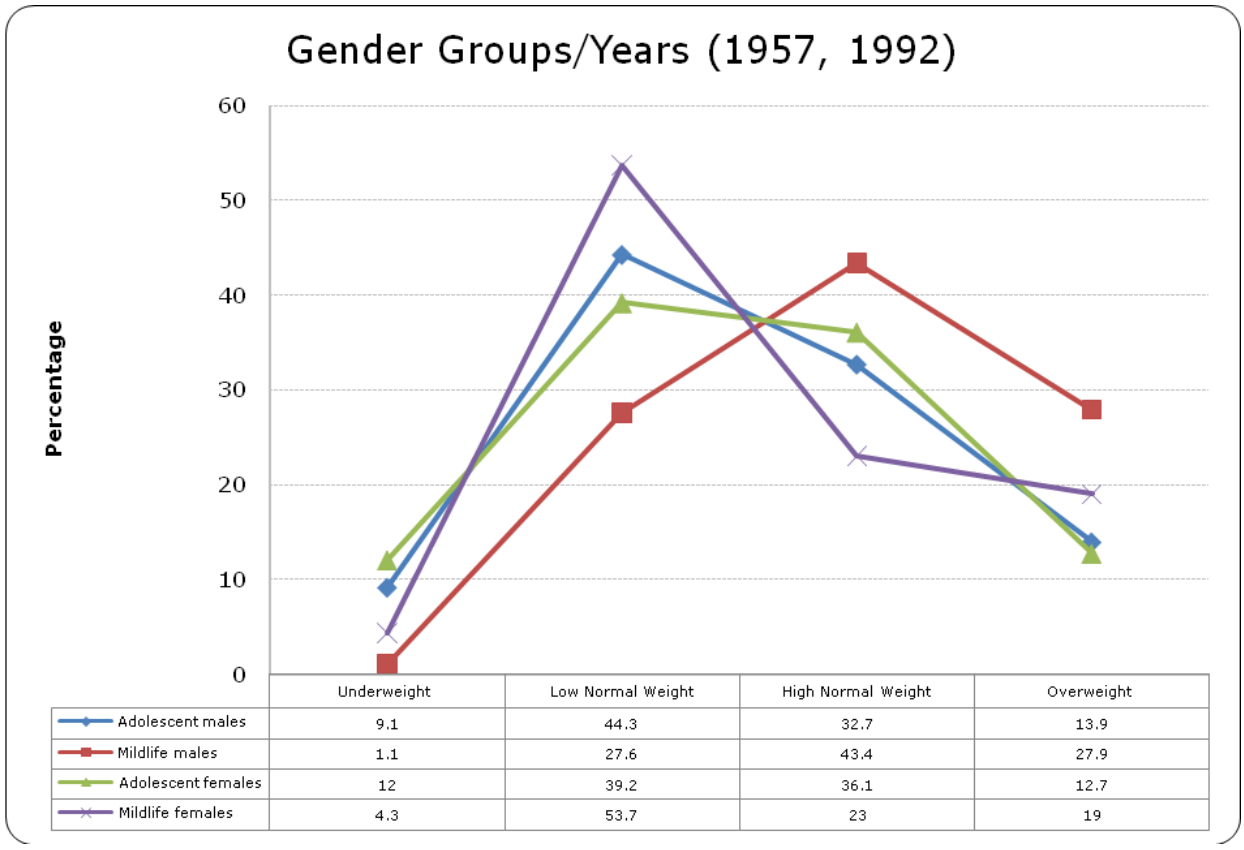
†- p<.1; *- p≤ .05; **- p≤ .01.

Table 9 Effects of Childhood Obesity on Adulthood SES

	Men		Women		Men		Women	
	Income in 1992				Education Accomplished (years)			
	Model1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Underweight	-	-	-	-	-	-	-	-
Low Normal Weight	-6.044(4.692)	-7.284(4.636)	-3.43(2.133)+	-3.104(2.122)+	.392(.290)	.365(.276)	-.107(.184)	-.098(.173)
High Normal Weight	-4.098(4.836)	-5.017(4.781)	-4.026(2.155)+	-3.234(2.148)+	.289(.299)	.288(.284)	-.722(.186)***	-.569(.175)***
Obesity	-9.496(5.463)+	-8.737(5.386)+	-2.738(2.596)	-1.635(2.594)	.110(.338)	.225(.320)	-.707(.224)**	-.504(.211)*
Factor-Weighted SES score		2.749(1.075)**		1.217(.572)*		.166(.064)**		.099(.047)*
FATHER'S OCCUPATION								
Unskilled		-		-		-		-
Manual		3.324(3.209)		.932(1.746)		.140(.191)		-.068(.142)
Non-Manual		-3.667(5.410)		-.967(2.715)		.336(.321)		.363(.221)+
FATHER'S EDUCATION								
<12 years		-		-		-		-
12-16 years		3.365(2.976)		.910(1.559)		.713(.177)***		.634(.127)***
17+ years		29(8.775)**		8.748(4.348)*		2.996(.522)***		1.733(.354)***
MOTHER'S EDUCATION								
<12 years		-		-		-		-
12-16 years		6.24(2.752)*		4.540(1.468)**		.474(.164)**		.551(.120)***
17+ years		10.892(15.563)		3.791(6.682)		1.001(.925)		2.226(.544)***
FAMILY INCOME								
Low Income		-		-		-		-
Mid Income		-5.641(4.442)		1.113(2.464)		-.382(.264)		.065(.201)
High Income		1.251(4.050)		1.105(2.170)		.189(.241)		.093(.177)
Intercept	49.617(4.287)***	35.692(6.008)***	21.171(1.865)***	12.9(2.996)***	13.670(.265)***	12.443(.357)***	13.713(.161)***	12.724(.244)***

Notes: †- p<.1; *- p≤ .05; **- p≤ .01; ***- p≤ .001

Figure 1 Prevalence of obesity at 1957/1992 wave of data collection in the WLS by gender/years group



	Underweight	Low Normal Weight	High Normal Weight	Overweight
Adolescent males	9.1	44.3	32.7	13.9
Mildlife males	1.1	27.6	43.4	27.9
Adolescent females	12	39.2	36.1	12.7
Mildlife females	4.3	53.7	23	19