Stress and Trajectories of Change in Body Mass: A Life Course Perspective

Debra J. Umberson, *University of Texas at Austin*
Hui Liu, *University of Texas at Austin*
Corinne Reczek, *University of Texas at Austin*

Description of Topic and Theoretical Focus

Recent work emphasizes a "natural alliance" of stress and life course perspectives with both childhood and adult stress having consequences for population health across the life course. Most research on this topic focuses on the effects of stress on mental health or physical health outcomes. Much less attention has been directed to the effects of stress on health behaviors over the life course or on the role of stress in explaining social disparities in health behaviors known to affect population morbidity and mortality. In this paper, we focus on one particular health behavior—eating behavior—that is reflected in body mass. Although researchers and policy makers are rightfully concerned about increasing rates of overweight and obesity in the United States, weight *loss* may also be a significant concern in elderly populations.

Sociologists and demographers have not considered how stress burden affects weight change in the general population and how this linkage might vary over the life course or across social groups. We work from a stress and life course perspective and suggest that stress exposure may lead to distress reactions and coping responses that involve eating behavior and lead to weight change. Moreover, stress may have stronger effects on weight gain and weight loss at different points in the life course or for different social groups (for example, by race or gender).

Research Questions:

We analyze growth curve models (using data from four waves of a national survey) to consider the effects of childhood stress and adult stress burden on trajectories of change in body mass across the life course. Both stress and body mass may fluctuate up or down over the life course. Our methods consider these parallel processes. We address the following specific questions:

1. Is adult stress burden associated with trajectories of change in body mass over time?
2. Is childhood stress associated with trajectories of change in adult body mass over time?
3. Do effects of adult and childhood stress on body mass depend on respondent age?
4. Do answers to questions 1 through 3 vary depending on gender or race?

Data and Methods

We analyze data from four waves of the Americans' Changing Lives Study, a national panel survey conducted in the United States. Our analytic subsample is comprised of the 3,497 respondents who are either non-Hispanic White or African American. Data were collected at four time points: In 1986, 1989, 1994 and 2001. Missing values due to survey attrition or missing data are imputed using the Full Information Maximum Likelihood (FIML) imputation method. We use latent growth curve models to predict change in body mass across the four waves of data in relation to change in stress levels across the first three waves of data.

Body Mass Index is calculated as weight (in kilograms) divided by height-squared (in meters). The measure of adult stress burden reflects seven recent life events (i.e. death of a significant other, provide or arrange care for an impaired person, involuntary job loss, birth of a child, residential move, life threatening illness or injury, and death of a parent) and five potential sources of chronic stress in various life domains (i.e. parental role, finances, job, health, and care provider strain). The measure of childhood stress is based on seven family-related stressors that occurred at age 16 years or younger: at least one parent died, parents divorced, parents had marital problems, at least one parent had a mental health problem, at least one parent had an alcohol problem, never knew father, and family economic hardship.

Results

Results indicate that both childhood stress and adult stress burden are associated with BMI trajectories over time. Moreover, the direction of adult stress burden effects on body mass depends on respondent age. Among younger individuals (age 54 and younger), more baseline adult stress and higher levels of childhood stress are associated with accelerated weight *gain*. Among older individuals (age 55 and older), more baseline adult stress and higher childhood stress are associated with accelerated weight *loss (See Figure 1 and Model B of Table 2).* Additional analyses suggest that this effect is not attributable to age differences in physical health status.

The effects of baseline adult stress and fluctuations in adult stress on trajectories of change in BMI do not differ for men and women. However, we find that age differences in the effects of childhood stress on body mass trajectories depend on gender: High childhood stress is associated with accelerated weight loss among older women and accelerated weight gain among younger women. Childhood stress is not significantly associated with trajectories of change in BMI for men, regardless of age. Among African Americans (but not whites), increases in adult stress burden are associated with accelerated weight gain.

Conclusions

Growth curve results from a national, longitudinal survey, conducted in the United States, provide evidence that stress is associated with change in body mass over time and that the nature of this change reflects life course processes. Both childhood stress and stress burden in adulthood are associated with patterns of weight change over time but the nature of this effect depends on age. Higher levels of adult stress seem to contribute to weight gain among younger respondents (under age 55) and to weight loss among older respondents (age 55 and older). Moreover, childhood stress has similarly patterned effect on BMI change among women. Adults tend to gain weight until their mid 50s and to stabilize or lose weight with advancing age. Stress may amplify these natural patterns of weight change. In contrast, increases in adult stress burden contribute to weight gain among African Americans regardless of age. These findings point to the need to consider social and cultural factors associated with the consumption of food in response to stress across the life course.

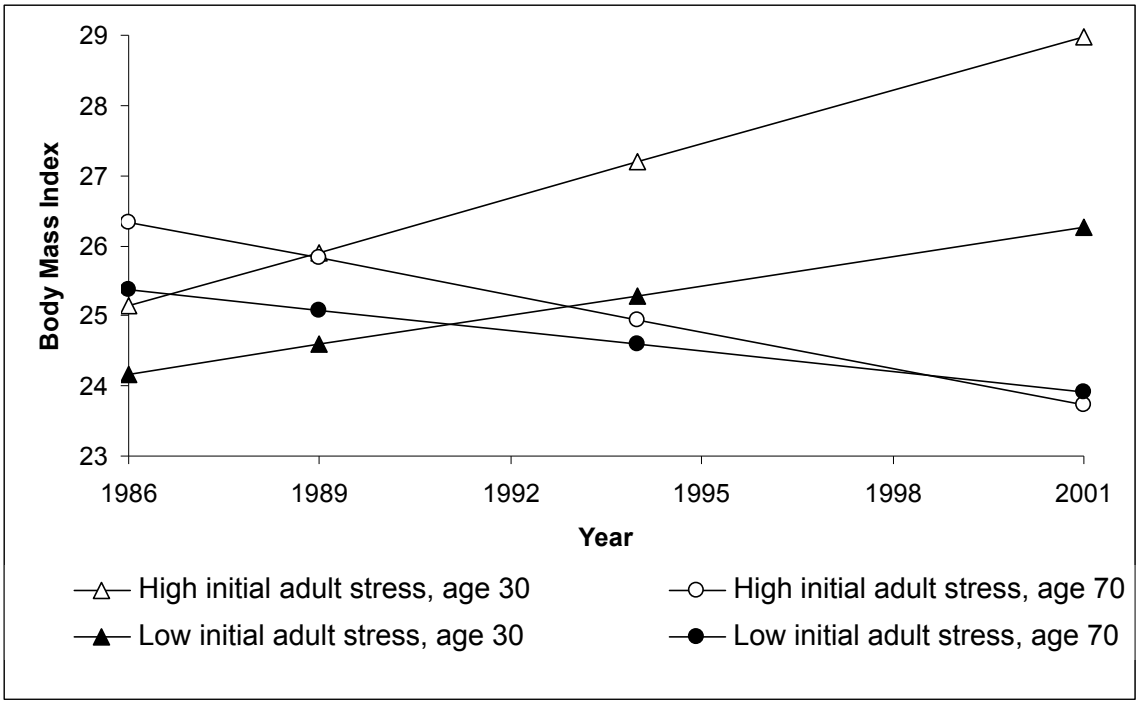

Figure 1. Predicted Body Mass Trajectory by Baseline Adult Stress and Age

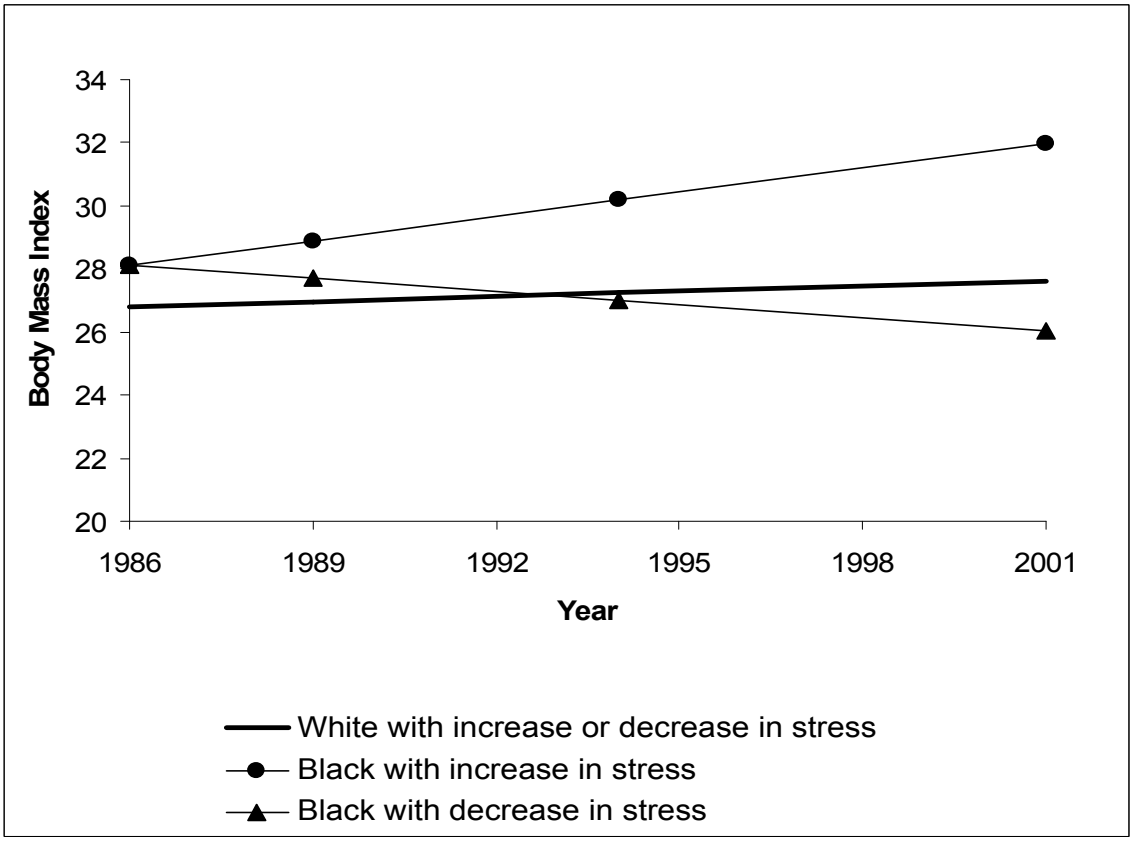

Figure 2. Predicted BMI Trajectory by Adult Stress Change and Race

TABLE 1. Estimated Effects of Adult Stress Trajectory on BMI Trajectory from Growth Curve Models (N=3497)

	Model A		Model B		Model C		Model D	
	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
Stress Trajectory								
Initial Adult Stress	0.769***	0.004	0.702***	-0.024	1.267***	0.013	0.625***	0.001
Changing rate of adult stress		-0.055		-0.230		-0.171		-0.077
Stress TrajectoryXAge								
Initial Adult StressXage			-0.168	-0.035***				
Changing rate of adult stressXage				-0.052				
Sss TrajectoryXGender								
Initial Adult StressXmale					-1.258***	-0.025		
Changing rate of adult stressXmale						0.083		
Stress TrajectoryXRace								
Initial Adult StressXblack							0.340	0.079
Changing rate of adult stressXblack								3.598***
Socio-demographic Covariates(W1)								
Age	0.114	-0.089***	0.064	-0.093***	0.076	-0.088***	0.065	-0.087***
Age-squared	-0.361***	-0.008***	-0.375***	-0.012***	-0.363***	-0.008**	-0.363***	-0.010***
Male	0.092	-0.018	0.107	-0.017	0.093	-0.018	0.112	-0.014
Black	1.292***	0.008	1.329***	0.009	1.279***	0.008	1.307***	-0.006
Education	-0.126***	0.006**	-0.135***	0.006*	-0.129***	0.006*	-0.132***	0.005*
Family income ($1000)	-0.012	-0.002	-0.037	-0.002	-0.039	-0.002	-0.043	-0.003
Previously divorced	-0.217	0.014	-0.166	0.014	-0.176	0.013	-0.168	0.013
Mean	26.841***	0.046***	26.818***	0.044***	26.843***	0.046***	26.810***	0.053***
Variance	22.472***	0.048***	22.420***	0.046***	22.247***	0.047***	22.461***	0.038***
Model Fit Index								
AIC	153403.323		77545.686		77556.343		77546.582	
BIC	153698.987		77773.594		77778.091		77768.329	