

Sick and Stuck:
The Legacy of Obesity and Disconnectedness Among Transitioning Adults

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Abstract

More than one-in-six 18 to 24 year olds are ‘disconnected;’ that is, unemployed, not currently in school or military, and only a high school diploma. Disconnectedness may relate to poorer socioeconomic outcomes. Health is one potential source of disconnectedness. Obesity is one measure influencing social, psychological, and socio-economic outcomes throughout the life course, but has not been considered as a potential source of disconnectedness. Using data from the National Longitudinal Study of Adolescent Health, we examine whether obesity over the life-course can predict disconnectedness during the transition to adulthood. Individuals who were obese in adolescence and young adulthood as well as those who were only obese in the transition to adulthood were significantly more likely to be disconnected than individuals who have never been obese. As such, there may not be long-term consequences in the relationship between adolescent obesity and current disconnectedness, but there is a relationship when considering adulthood.

The idea that young people can disengage or become unable to meet traditional transition to adulthood experiences (e.g., furthering education, getting a job, gaining a life partner, becoming a parent, etc.) has caught social scientists' attention. Disconnected young adults have been defined as individuals between 18 and 24 years of age who do not advance beyond high school education, are not currently enrolled in school or college, are not currently employed and are not in the military (Jekielek & Brown, 2005). This is an important distinction from simple unemployment or lack of college education, because not only do young adults who become disconnected have problems associated with disconnectedness during the transition to adulthood (such as difficulty making rent), but later on they also have difficulties attaining employment or better paying jobs (Besharov & Gardiner, 1998). Disconnected young adults also are married at younger ages than non-disconnected youth, and twice as likely to be young parents (Wight, Chau, Aratani, Schwarz, & Thampi, 2010). Young marriage is associated with lower socioeconomic status (Meier & Allen, 2008) and higher body mass index (BMI) (Harris, Lee, & DeLeone, 2010) in young adulthood. Likewise, young parenthood is associated with more anger (Galambos & Krahn, 2008) and poorer socioeconomic outcomes (Boden, Fergusson, & Horwood, 2008). Individuals who are disconnected are considered to not be participating productively in society. According to the National Center for Children in Poverty, fifteen percent of Americans between 18 to 24 years of age were considered disconnected in 2010 (Wight et al., 2010). That is, more than one-in-six young people transitioning to adulthood are disconnected at some point between 18 and 24 years of age.

Little research has focused on consequences and sources of disconnectedness. Rather than considering the concept of disconnectedness, most research has focused on either

employment status or educational attainment, but not the combined definition disconnectedness suggests. The population of young adults who are disconnected is different from those who are unemployed or have not achieved higher education, in that these are the individuals who have *neither*. According to data from the Annie E. Casey Foundation, among connected young adults, 43% are engaged in work only, almost a quarter are engaged in only school, while 28% were engaged in school only (Jekielek & Brown, 2005). Some unemployed young adults may have higher education, which should indicate better trajectories over the life course. Further, individuals without college education, but who are employed or enlisted in the military, may have better trajectories than those unemployed, and those unemployed with advanced education. When concentrating only on unemployment or educational attainment, rather than the two as one comprehensive categorization, the importance of the two and how education and employment may influence one another is lost.

Research that has examined disconnectedness specifically has found that young people who were disconnected during the transition to adulthood have poorer employment trajectories in their later twenties (Besharov & Gardiner, 1998). This research illustrates that the people who become disconnected in the first place are not able to make up for this loss in status with regard to employment, at least by their late twenties. It is not clear though what characteristics relate to or are at the source of disconnectedness, though.

One potentially source for disconnectedness is individual health. Scant research has specifically examined the possible link between disconnectedness and health. However, there have been considerable contributions noting the influence health in both childhood and adulthood can have on social outcomes. Several measures of health in childhood are known to relate to health outcomes and socioeconomic status in adulthood (Palloni, Milesi, White, &

Turner, 2010). Broadly, better health in childhood predicts better health in adulthood. Further, and important for our purposes, better health in childhood also relates to higher socioeconomic status in adulthood. However, it is still not clear how health influences disconnectedness specifically, and whether or not better health in childhood can prevent disconnectedness during the transition to adulthood.

Obesity is one health measure that has garnered considerable attention from researchers over the past decade. Further, and like some other health measures, obesity endures from childhood and adolescence to adulthood, as obesity in childhood predicts obesity in adulthood (Gordon-Larsen, Adair, Nelson, & Popkin, 2004; Guo, Wu, Chumlea, & Roche, 2002). Childhood and adulthood obesity both have been found to influence social outcomes, in addition to health outcomes. Considerable research has found that obesity in adolescence relates to lower socioeconomic status, such as income and educational attainment, in young adulthood (Lee, Harris, & Gordon-Larsen, 2009; Scharoun-Lee, Adair, Kaufman, & Gordon-Larsen, 2009).

Obesity in childhood and adulthood also influences the quality and quantity of social networks. For example, obese children and adolescents have fewer friendships (Strauss & Pollack, 2003; Crosnoe, Frank, & Mueller, 2008). Additionally, obesity in adulthood influences the attractiveness of romantic partners, where obese individuals have less attractive partners than non-obese individuals (Carmalt, Cawley, Joyner, & Sobal, 2008). The effect obesity has on social and socioeconomic outcomes over time indicate that obesity in both adolescence and adulthood relates to poorer outcomes later in life. However, it is not clear as to how obesity relates to disconnectedness. These findings suggest that not only does obesity influence a plethora of health outcomes both in childhood (Fagot-Campagna, Saaddine, Flegal, & Beckles 2001; Luder, Melnik, & DiMaio, 1998; Mallory, Fiser, & Jackson, 1989; Must, 2003; Rodríguez,

Winkleby, Ahn, Sundquist, & Kraemer 2002) and adulthood (Freedman, Dietz, Srinivasan, & Berenson, 1999; Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997), but also adversely affects socio-economic outcomes as well.

This leads us to our main hypothesis: individuals who have a history of obesity, whether past or present, will be more likely to be disconnected, when compared to individuals who have never been obese.

Methods

Data

This study uses data from the National Longitudinal Study of Adolescent Health (henceforth, Add Health). Add Health is a nationally representative sample of 7th through 12th graders in the 1994 to 1995 school year. Over 20,000 adolescents completed the In Home survey portion of the study in its first wave. (Harris, Halpern, Whitsel, Hussey, Tabor, Entzel, & Udry, 2009). Over 15,000 young adults who participated in Wave I also participated in Wave III. Interviews for Wave III took place from 2001 to 2002, making respondents 18 to 26 years of age. These data are stratified by Wave I region and clustered by the schools the respondents attended at Wave I (Harris, Halpern, Whitsel, Hussey, Tabor, Entzel, & Udry, 2009). The analyses in this study have been weighted and adjusted to estimate population values (Chantala, 2002; Chantala & Tabor, 1999; Tourangeau & Shin, 1998). We have excluded respondents who have missing values on any of the variables of interest, leaving our final sample at 10,408.

Measures

Independent measure. The independent measure of interest in this study is obesity in adolescence and during the transition to adulthood. Obesity in adolescence and childhood is

defined by the Centers for Disease Control refers to body mass index (BMI) by age group, assessed using a Z-score for BMI, referred to as ZBMI (CDC, 2010). In adulthood, obesity is defined as a BMI of 30 or greater (CDC, 2010). We assess this in terms of a legacy: that is, we are interested in obesity status in both adolescence and the transition to adulthood. There are four possible categories all respondents fall in to. Those considered always obese are respondents who were obese in both Wave I and Wave III of Add Health. In contrast, we consider those never obese if they were not obese in Wave I and Wave III. The other two categories refer to individuals who were obese at one point, but not at the other. The first, are people who are newly obese. These are people who were not obese in adolescence, but were obese in the transition to adulthood. The last group are people who were obese in adolescence, but not in the transition to adulthood. These individuals are considered formerly obese. Those who have never been obese serve as the reference group in the multivariate analyses.

Dependent measure. The dependent measure of interest here is disconnectedness. Respondents are considered disconnected if they are not currently working, not in the military, have a maximum of high school education, and are not currently in college (Jekielek & Brown, 2005). Those who are not disconnected, are those who are working, in the military, have greater than a high school education (but not necessarily a bachelor's degree), and/or are currently in college. In our sample, 12.6% (N=1,308) were considered disconnected (Jekielek & Brown, 2005). This is slightly less than U.S. population estimates from 2000 and 2010 (Jekielek & Brown, 2005; Wight et al., 2010).

Covariates. A number of measures were considered alongside obesity as potential predictors of disconnectedness. As control measures, we consider race, age, gender, region, urbanicity and parental influence. Race is considered as five exclusive categories developed from

Wave III categories. Add Health allows for respondents to respond as having multiple racial identifications. If respondents only responded as identifying as one racial group, they were defined by the racial group. The individual racial groups are white, Black, Asian, and Native American. Respondents who answer that they are more than one racial group are coded as Multiracial. For respondents who stated that they were any race but also of Hispanic or Latino origin, the respondent is coded as Hispanic or Latino. In the multivariate analyses, whites are considered the reference group.

Region is determined by the geographic region the respondent was living in at Wave I. There are four possible region categories: Northeast, Midwest, South and West. The Southern region serves as the reference group in the multivariate analyses. Similarly, urbanicity is determined by the urbanicity of the school the respondent attended at Wave I. Three urbanicity categories are presented: suburban, urban and rural. Suburban serves as the reference group in the multivariate analyses.

Gender is determined by the gender of the respondent at Wave III. Over half the respondents were women. Age is calculated by a formula derived from the respondents' month and year of birth, and the date of the interview, ranging from 18 to 26.

Influential parental factors include parents' ability to pay their bills each month, whether or not they were receiving public assistance, and whether or not the interviewed parent had dropped out of high school. Each of these questions were asked during Wave I in the Parent Survey portion of Add Health.

First, in order to determine whether or not a statistically significant relationship exists between obesity and disconnectedness, we conduct cross-tabulations with chi-square significance tests. Next, we address findings predicting disconnectedness among young adults transitioning

into adulthood. Binary logistic models have been conducted in order to test for disconnectedness. Odds ratios are presented in all four models. The first model considers only the obesity legacy variables as predictors of disconnectedness. The second model considers the covariates, excluding the parental influence factors. Model three considers obesity legacy and the covariates less the parental influence factors. Finally, Model 4 considers obesity legacy and all the covariates.

Results

Bivariate Findings

First, we illustrate the findings from the cross-tabulations with chi-square statistics (see Table 1). We examine each of the obesity status dummy variables, compared to whether or not individuals are considered disconnected. Of the overall sample 1,308 or 12.6% are considered disconnected. Obesity significantly relates to disconnectedness among those who were always obese, are newly obese, and those who were never obese. Among those who were always obese, 16.25% are disconnected, significantly greater than the overall sample (chi-square=6.0469, $p=0.0139$). Among those considered newly obese, 19.3% are disconnected, which is also significantly greater than the overall sample (chi-square=21.6761, $p<0.0001$). There is no significant difference between those who were formerly obese and the overall sample on disconnectedness. Interestingly, those who were never obese had significantly lower proportions of disconnectedness, with 10.8% being disconnected (chi-square=27.1962, $p<0.0001$). Next, we examine the multivariate findings, utilizing the never obese category as the reference group in predicting disconnectedness.

Multivariate Findings

We conducted binary logistic regression in order to test the likelihood of individuals being disconnected during the transition to adulthood. In order to ease interpretation, we have reported odds ratios (see Table 2). The first model predicts disconnectedness using only the obesity legacy variables. Respondents who were always obese or are newly obese are both significantly more likely than respondents who were never obese to be disconnected during the transition to adulthood.

Model 2 examines only the covariates, less the parental factors, in predicting odds of disconnectedness. Briefly, Black, Native American, Latino and Multiracial respondents are all significantly more likely to be disconnected than are White respondents. Women are more likely to be disconnected than were men. Finally, respondents who attended schools in the Midwest are also significantly more likely than those growing up in the South to be disconnected in the transition to adulthood. In contrast, with each year increase in age, the odds of being disconnected decrease.

The third model includes the obesity legacy measures and the covariates less parental factors. Similar to the results indicated earlier, respondents who have always been obese, or are newly obese are significantly more likely to be disconnected when considering race, age, gender, region and urbanicity of community during adolescence. Former obesity does not significantly predict disconnectedness when considered alongside the covariates.

The final model includes parental factors as well as potential predictors of disconnectedness during the transition to adulthood. Still though, having always been obese and new obesity both predict significantly greater likelihoods of disconnectedness during the transition to adulthood. While having parents who were receiving public assistance and/or having parents who dropped out of high school significantly increase odds of disconnectedness,

obesity in adulthood, whether having always been obese or only recently becoming obese, significantly increases odds of disconnectedness.

Discussion & Conclusion

We anticipated that obesity would promote disconnectedness, and our results partially support this hypothesis. We found that respondents who had been obese both in adolescence and the transition to adulthood were significantly more likely to be disconnected than respondents who had never been obese. We also found that respondents who were only obese in adulthood were significantly more likely to be disconnected than those who had never been obese. However, respondents who were only obese in adolescence were not any more or less likely to be disconnected than those who had never been obese. This suggests that the impact of obesity on disconnectedness is temporally defined. That is, the past does not matter as much as the here-and-now in predicting disconnectedness during the transition to adulthood.

This runs counter to much of the prior research predicting ill social effects from childhood obesity, but confirms findings on obesity in adulthood (Lee et al., 2009; Scharoun-Lee et al., 2009). Much of the social research on childhood obesity indicates both a temporal and longitudinal effect of obesity on psychological, social and socio-economic outcomes, but our findings here indicate that obesity in adolescence does not influence disconnectedness, as only the obesity in adulthood appears to influence disconnectedness. Meaning, while obesity in adolescence does relate to poorer educational and employment outcomes in the transition to adulthood, it does not predict the most severe outcomes in both. However, obesity in adulthood does influence disconnectedness, confirming prior findings on the difficulties obese individuals

face in the workplace (Besharov & Gardiner, 1998) and in attaining higher education (Lee et al., 2009; Scharoun-Lee et al., 2009).

Table 1: Cross-Tabulation with Chi-Square Statistics Comparing Disconnectedness and Legacy of Obesity

	Disconnected				Total	Chi-Square	P-Value
	Yes		No				
<i>Obesity</i>							
Always Obese	135	16.245%	696	83.755%	831	6.0469	0.0139
= 0	1,173	12.248%	8,404	87.752%	9,577		
Newly Obese	281	19.299%	1,175	80.701%	1,456	21.6761	0.0001
= 0	1,027	11.472%	7,925	88.528%	8,952		
Formerly Obese	48	14.545%	282	85.455%	330	0.3607	0.5481
= 0	1,260	12.502%	8,818	87.498%	10,078		
Never Obese	844	10.833%	6,947	89.167%	7,791	27.1962	0.0001
= 0	464	17.730%	2,153	82.270%	2,617		
Overall	1,308	12.567%	9,100	87.433%	10,408		

Table 2: Legacy of Obesity on Disconnectedness (odds ratios shown)

Variable	Model 1	Model 2	Model 3	Model 4
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
<i>Obesity</i>				
Always Obese	1.709 ***	-	1.626 ***	1.526 ***
Newly Obese	1.857 ***	-	1.675 ***	1.537 ***
Formerly Obese	1.385	-	1.281	1.212
Never Obese (ref.)	-	-	-	-
<i>Individual Factors</i>				
<i>Race</i>				
Black		1.973 ***	1.926 ***	1.691 ***
Asian		0.579	0.596	0.538
Native American		2.519 **	2.490 **	1.598
Latino		1.801 ***	1.710 ***	1.337 t
Multiracial		2.339 ***	2.323 ***	2.258 ***
White (ref.)		-	-	-
Age		0.946 *	0.941 *	0.938 *
Female		1.784 ***	1.732 ***	1.665 ***
<i>Region</i>				
Northeast		0.886	0.908	0.925
Midwest		1.245 *	1.246 *	1.255 *
West		0.906	0.927	1.003
South (ref.)		-	-	-
<i>Urbanicity</i>				
Urban		1.015	1.052	1.022
Rural		1.046	1.036	1.001
Suburban (ref.)		-	-	-
<i>Parent Factors</i>				
P Couldn't Pay Bills				1.138
P Rec'd Public Assistance				1.757 ***
P Dropped Out				1.754 ***
-2 Log Likelihood	11,460,721	11,108,492	11,026,142	10,845,538

p < .10 †

p < .05 *

p < .01 **

p < .001 ***

N = 10,408

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