UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

I (DON'T) FEEL PRETTY: WEIGHT PERCEPTION, SELF-ESTEEM, AND GENDER IN ADOLESCENCE AND YOUNG ADULTHOOD

A THESIS

SUBMITTED TO THE GRADUATE COLLEGE FACULTY

in partial fulfillment of the requirements for the

Degree of

MASTER OF ARTS

By

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Norman, Oklahoma
2019

I (DON'T) FEEL PRETTY: WEIGHT PERCEPTION, SELF-ESTEEM, AND GENDER IN ADOLESCENCE AND YOUNG ADULTHOOD

A THESIS APPROVED FOR THE

DEPARTMENT OF SOCIOLOGY

BY

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Table of Contents

Acknowledgments

I would first like to thank my chair, Dr. Stephanie Burge. She has been a constant source of support and inspiration in the formulation, research, and editing process of this project from the very beginning. I would also like to thank the other members of my committee, Dr. Cyrus Schleifer and Dr. Samuel Perry. Dr. Schleifer's methodological expertise guided and informed each step of my analysis and Dr. Perry's direction helped solidify and hone the narrative of this project. Their help has been immense, and any shortcomings of this article are entirely my own.

I would also like to thank my wonderful spouse, Meg Reeder-Cramer, for the innumerable ways she has supported me during this process. I would not be the student, researcher, or person I am today without you.

My mom and dad have been unbelievably supportive and encouraging throughout my entire life, including my academic endeavors. I am beyond blessed to have you both as parents. You are my role models of how to live, appreciate life, and care for those around me. Thank you for everything. (Mom, don't worry, I triple checked that I put my name on my paper!)

I would also like to acknowledge the feedback and mentorship I received from Dr. Rob Clark – I greatly appreciate your scholarly input and friendship.

Finally, I would like to thank all those – fellow graduate students, faculty, and staff – from the Department of Sociology at the University of Oklahoma.

Abstract

Life course scholars have established that early life experiences are crucial factors in shaping developmental trajectories (Elder, et al. 2003). Early adolescent health has been one of the most widely studied of these factors (e.g. Willson, et al. 2007; Forest and Riley 2004), with increased attention being paid to the enduring effects of obesity across the life course (Reilly and Kelly 2011; Schafer and Ferraro 2012; Raj and Kumar 2010). While obesity is shown to be associated with several negative social and psychological outcomes (Wadsworth and Pendergast 2014), less is known regarding how self-perceived weight affects individuals' mental health trajectories through adolescence and young-adulthood. To address this gap, I use nationally representative longitudinal panel data to analyze how self-perceived weight affects self-esteem trajectories during the transition to adulthood. Furthermore, I test the extent to which these processes work differently for young men and women. Consistent with previous literature (Greene and Way 2005), I find that, on average, self-esteem increases linearly through adolescence and young adulthood. While weight perception is significantly and negatively associated with self-esteem trajectories for both men and women, the effect is greater for women than men. These findings are relevant for scholars and health practitioners and, in the conclusion of this article, the implications of these findings are discussed.

Key words: self-esteem, gender, weight perception, adolescence, Add Health

Introduction

Considerable amounts of research has explored the physical, social, and psychological impact of obesity in light of rising obesity rates in the United States (e.g. Masters, et al. 2013; Carr and Friedman 2005; Spinetta 2013; Wadsworth and Pendergast 2014; Bauldry, et al. 2016). This literature suggests that obesity – typically measured using body mass index (BMI) – is related to several negative outcomes including lower educational attainment (Crosnoe and Muller 2004; Crosnoe 2007; Glass et al. 2010), lower economic status (Averett and Korenman 1996), and an array of negative physical (Schafer and Ferraro 2012; National Heart, Lung, and Blood Institute 1998) and mental health outcomes (Graham and Felton 2005; Luppino, et al. 2010). Research suggests that these associations are partially due to the stigma overweight individuals incur through the life-course (Conley and Glauber 2006; Schafer and Ferraro 2011; Carr and Friedman 2005; Spinetta 2013; Bauldry et al. 2016).

While having a high BMI is linked to a variety of negative outcomes, less is known about how *subjective weight perception* impacts individuals across these same domains. These subjective assessments may be just as - if not more - important than the objective criteria for understanding the psychological consequences of weight in the United States. Given that self-esteem is central to one's self-view and has been linked to a variety of positive outcomes (Swann Jr., et al. 2007; Rosenberg, et al. 1989), I use nationally representative data from Add Health to investigate how subjective weight perceptions are associated with changes in self-esteem as young women and men transition into young adulthood, a critical juncture in the life course (Schulenberg et al. 2004; Elder 2003). In addition, because previous literature documents significant gender differences across these domains (Baldwin and Hoffmann 2002), I test

whether subjective weight perception is differentially associated with young women's and men's self-esteem trajectories.

To orient my analysis, I first outline research on self-esteem. Following this, I review research on body-image and mental health outcomes before transitioning to my analyses of self-esteem trajectories and how subjective weight perception is associated with these trajectories through adolescence and young adulthood.

Literature Review

Self-Esteem. In the past several decades, self-esteem in adolescence has been the subject of a great deal of literature (for summary see Thomaes, et al. 2011). Rosenberg defines self-esteem as an "individual's positive or negative attitude toward the self as a totality" (1995: 141). This definition reflects "global" self-esteem (Swann, Jr. et al. 2007), which is "most relevant to [one's] psychological well-being" (Rosenberg, et al. 1995: 144) and is theoretically distinct from "specific" forms of self-esteem which are concerned with specific role outcomes (i.e. academic and vocational outcomes). Global self-esteem – hereafter simply "self-esteem" – is the central concern of this paper.

Low self-esteem has been linked to a variety of negative psychological outcomes including increased anxiety (Bauchman 1970; Rosenberg 1965), eating disorder tendencies (Baumeister, et al. 2003), depression (Rosenburg 1965; Baumeister, et al. 2003; Thomaes 2011), and suicidal ideation (Overholser, et al. 1995). Self-esteem's relationship to other, non-psychological outcomes, has been more hotly contested. In particular, in their critical evaluation of self-esteem, Baumeister and colleagues (2003), contend that people with high self-esteem are no more likely to perform better in school, enjoy better and longer-lasting relationships, or avoid early risk-taking behaviors (smoking, drinking, drug use, and early sex). Importantly, in their

evaluation they find evidence that high self-esteem is associated with certain psychological outcomes including greater happiness and reduced chances of eating disorders in females.

Recent literature also investigates how self-esteem changes across the life course. Far from being a static trait, self-esteem is dynamic and changes throughout adolescence (Baldwin and Hoffmann 2002; Greene and Way 2005). Specifically, self-esteem declines during the transition from childhood to early adolescence "as individuals struggle with their self-concept and identity in the face of numerous physical, social, and cognitive changes," and generally stabilizes or increases during middle and late adolescence as individuals "consolidate their self-concept and begin to forge a sense of identity" (Greene and Way 2005: 153). From this past literature, I expect average levels of self-esteem to increase through the transition to adulthood.

Researchers have attempted to capture these patterns in methodologically diverse ways. Traditional approaches have measured self-esteem at the group level (e.g. Block and Robins 1993), capturing averages while ignoring individual variation in self-esteem trajectories. In response to these limitations, researchers began using "idiographic methods such as cluster analysis" (Greene and Way 2005:153) to discover unique trends in self-esteem (Zimmerman, et al. 1997). While these methods provide key insights into distinct differences in self-esteem trajectories, they are limited in that they are unable to capture change at the individual level. To model self-esteem trajectories at a group *and* individual level, a small number of researchers have turned to growth curve models (Baldwin and Hoffman 2002; Scheier, et al. 2000; Greene and Way 2005). A key benefit of growth curve models is that they estimate "between-person differences in within-person change," (Curran et al. 2010) enabling researchers to capture key individual developmental differences across groups (Preacher, et al. 2008). While this model has been used to evaluate adolescent self-esteem trajectories, the samples used in these studies have

been limited racially (Baldwin and Hoffman 2002; Scheier, et al. 2000), geographically (Greene and Way 2005), and in the scope of the respondents' age (Ali, et al. 2010). In contrast, my analysis uses a nationally representative sample of adolescence and young adults, allowing me to generalize my findings to a national level.

Past research has found that self-esteem trajectories significantly vary across demographic factors such as race/ethnicity and gender (Strauss 2000; Mustillo, et al. 2012). On a limited sample, researchers have found that black adolescents typically report higher levels of self-esteem throughout adolescence (Greene and Way 2005) and tend to have more positive attitudes toward their bodies relative to white adolescents, particularly among women (Boyd, et al. 2011). Regarding gender differences, men typically have more positive self-esteem trajectories (Zimmerman, et al. 1997; Block and Robins 1993; Baldwin and Hoffmann 2002) as well as less rigid weight norms compared to women (Wedow, et al. 2017). Furthermore, body dissatisfaction is associated with self-esteem for women, but not men (Furnham et al., 2002; Grossbard, et al. 2009).

Gendered Body Concerns and Self-Esteem. The central aim of this study is to analyze how subjective weight perception affects self-esteem trajectories through adolescence and young adulthood. Though substantively distinct from subjective weight perception, a considerable amount of research has investigated the association between body dissatisfaction and self-esteem (Furnham et al. 2002; Paxton, et al. 2006; Johnson and Wardle 2005; Miller and Downey 1999).[1] These studies typically find significant gender differences in this association, with a stronger negative relationship between body dissatisfaction and self-esteem outcomes for adolescent girls

[1] Whereas body dissatisfaction typically measures the difference between respondents' ideal weight and their current weight (Furnham, et al. 2002) or value judgements regarding their body size (Grossbard, et al. 2009), subjective weight perception is simply a self-classified assessment of body size. In the Measures section below, I outline the terminology of the measure capturing subjective weight perception in my study.

relative to boys (e.g. Furnham et al. 2002; Miller and Downey 1999). These differences are often explained by the standards of thinness women are disproportionately held to, which is a phenomenon coined the "thinness ideal" (Spinetta 2013). This ideal is "so extreme that many women feel fat even when they are not" (Miller and Downey 1999: 71). As a result, deviating from the "thinness ideal" by being overweight is highly stigmatized in Western cultures (Puhl and Heuer 2009), though the extent to which overweight individuals are stigmatized decreases relative to the normalcy of obesity in the individual's context (Wadsworth and Pendergast 2014; Miller and Downey 1999). Whereas women are more prone to experience a "drive for thinness" (Boyd, et al. 2011; Grossbard, et al. 2009), men tend to report a greater drive for muscularity. These patterns suggest that meaningful gender differences may exist in how self-perceived weight affects self-esteem trajectories during the transition to adulthood.

While the associations between body dissatisfaction, body weight, and self-esteem are key to fully understanding the psychological consequences of obesity, considerably less is known regarding how subjective weight perception is associated with these outcomes. In my review of the literature, only one other article explores how self-perceived weight is associated with self-esteem trajectories through adolescence (Ali, et al. 2010). Using nationally-representative data from over 13,000 adolescents between the ages of 11 and 18, Ali and colleagues found that self-perceived weight status has a significantly negative relationship with adolescents' mental health, while BMI was not directly nor significantly association with mental health outcomes. Especially relevant is their finding that self-esteem "was particularly correlated with body weight perception, suggesting a potentially important link between weight perception and self esteem" (Ali, et al. 2010). My present analysis builds and expands upon this research by tracking how subjective weight perceptions are associated with self-esteem trajectories

throughout adolescence *and* early adulthood, while controlling for objective weight measures, as well as analyzing how these processes vary by gender. In doing so, I am building off Ali and colleagues' (2010) work and extending it through the key life course transition of young adulthood (Schulenberg, et al. 2004).

Expectations

In my analyses, I address three research questions: (1) What is the growth trajectory of self-esteem in adolescence and young adulthood?; (2) Is subjective weight perception significantly associated with these trajectories, even after controlling for the effects of BMI?; and (3) Does self-perceived weight affect self-esteem trajectories for young men and women respectively? From previous literature, I formulate the following hypotheses:

H_1 : Self-esteem will have a positive linear trajectory through adolescence and young adulthood on average.

H_2 : Controlling for the effects of BMI, a heavier subjective weight perception will have a negative and significant association with self-esteem through adolescence and young adulthood.

H_3 : The negative association between self-perceived weight and self-esteem will be stronger for young women relative to young men.

Methods

Data

Data for my analysis come from the first three waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Designed at the University of North Carolina, Add Health is the largest and most comprehensive longitudinal survey of adolescents currently available (Harris and Udry 2008). Add Health is a nationally representative sample that used a

school-based, stratified cluster sampling method to gather student information from 80 high schools and 52 feeder (junior high and middle) schools in the United States (Harris and Udry 2008). The first wave of data was gathered when respondents were between 7th and 12th grade during the 1994-1995 school year (Harris and Udry 2008). Wave I data were collected via an in-school questionnaire and an in-home interview when respondents were 11 to 21 years old. In all, the Wave I sample size was 20,745 adolescents (Hitlin, et al. 2015). Since then, Add Health has completed four waves of data collection on original empaneled individuals. Wave II was conducted from April-August 1996 via follow-up in-home interviews. Wave III data were collected from August 2001 to April 2002 when respondents were 18 to 28 years of age. Response rates for Waves I, II, and III were 79%, 88%, and 77% respectively.[2]

In my analyses, I use Add Health's public-use dataset. This dataset consists of one-half the core sample and includes 6,504 Wave I respondents.[3] The Wave II public-use dataset includes 4,834 original (Wave I public-use) respondents and the Wave III public-use data set includes 4,882 original (Wave I public-use) respondents.[4] I use Add Health data because it asks adolescents a range of psychosocial and health related questions (Chen and Vazsonyi 2011; Hitlin, et al. 2015). Coupled with its longitudinal design, Add Health is an ideal dataset for analyzing the developmental trajectories of adolescents in the United States (Hitlin, et al. 2015).

[2] Wave IV is not used in my analyses because it does not include variables measuring self-esteem and Wave V, the most recent wave which recently finished data collection, is not available in the public-use format.

[3] Add Health's core sample is 12,105 adolescents (Harris and Udry 2008).

[4] Wave III has more respondents than Wave II largely due to the sample design wherein data from high school seniors (at the time of Wave I) were not collected in Wave II (Harris and Udry 2008).

Measures

Dependent Variable

Self-Esteem. Respondents' self-esteem is captured in Waves I, II, and III and is measured using questions from Rosenberg's Self-Esteem Scale (RSE, Rosenberg 1989). The RSE is widely used in self-esteem studies (Rosenberg, et al. 1995; Wang, et al. 1999; Greene and Way 2005; Paxton, et al. 2006; Johnson and Wardle 2005; Ali, et al. 2005) and was designed to measure global self-esteem (Rosenberg, et al. 1995). It is shown to demonstrate excellent reliability and internal consistency (Ciarrochi 2006) and, like previous studies (Rosenberg, et al. 1995; Longmore, et al. 2004), Add Health captures self-esteem from a partial list of the measures in the RSE. Self-esteem is captured in Wave I, II, and III with four questions: (1) "You feel like you are doing everything just about right," (2) "You have a lot of good qualities," (3) "You have a lot to be proud of," and (4) "You like yourself just the way you are." Each item is captured on a 5-point Likert scale with the categories: "strongly disagree", "disagree", "neither agree nor disagree", "agree", and "strongly agree." I add up the responses and divide the sum by the number of measures (four) to construct a self-esteem scale for each wave. In each wave the scale demonstrated good levels of reliability (W1: $\alpha = 0.79$; W2: $\alpha = 0.80$; W3: $\alpha = 0.78$) and ranges from 1 (low self-esteem) to 5 (high self-esteem).

Independent Variables

Perceived Body Weight. This measure is captured in each wave by the question, "How do you think of yourself in terms of weight?" Responses are captured on a 5-point scale with the categories: "very underweight", "underweight", "about right weight", "overweight", "very overweight." Following Martin, Frisco, and May (2009), I collapse responses into three

categories: underweight (very underweight and slightly underweight), about right weight, and overweight (slightly overweight and very overweight).[5]

Time Invariant Controls

Distinguishing between time-variant and time-invariant covariates is required in latent growth curve models. Time-variant covariates are variables that are expected to vary across time, while time-invariant covariates are not expected to be effected by time. My time invariant covariates include race, gender, and parental income at Wave I.

Race. Add Health collects data on respondents' race and ethnicity in Waves I and III with the question, "What is your race?" and "Are you of Hispanic or Latino origin?" Because race is treated as time-invariant and Wave I allows respondents to select an ambiguous "other" category, I choose to use respondents' Wave III race/ethnicity responses. Previous research suggests the most significant divide in weight-perception exists between white and black individuals (Boyd, et al. 2011). Because of this, I recode the race and ethnicity measures into the following categories: white non-Hispanic, black non-Hispanic, and other (comprised of Hispanic, Asian non-Hispanic, and Native American non-Hispanic) with white as the reference category.

Gender. Add Health captures respondents' gender identification as a binary (male/female). Because the reported gender identification of my respondents is stable across the first three waves of Add Health in over 99% of my cases, I treat gender as a time-invariant variable as captured at Wave I. I recode gender such that males (coded 1) are compared to females (coded 0).

[5] In analyses not shown, I ran models with the original 5-point scale. Other than the male model, which increased the p-value of perceived body weight to 0.055, the magnitude, direction, and substantive meaning of the coefficients were not altered.

Parental Income. Previous research suggests a child's relative class upbringing significantly affects how accepting they are of their bodies, their chances of engaging in eating-related problems, and later life mental health outcomes (Pavalko and Caputo 2013; Boyd, et al. 2011: 671, 675). Because of this, I control for parental income during Wave I. This variable is captured by asking parents, "About how much total income, before taxes did your family receive in 1994?" and is treated as a continuous variable.

Time Variant Controls

Body Related Controls. I calculate and control for an individual's body mass index (BMI) based off respondents' self-reported height and weight.[6] I calculate BMI using the Center for Disease Control's (CDC) formula: $weight\ (lbs.)/height(in.)^2\ \times 703$ and, following standard practice, I divide BMI into four categories: underweight (BMI < 18.5), healthy weight (BMI between 18.5-24.9), overweight (BMI between 25.0-29.9), and obese (BMI >= 30.0).

As an additional body related control, I include the interviewer's assessment of the respondent's physical attractiveness. Following the interview, interviewers respond to the question "How physically attractive is the respondent?" Potential responses are on a 5-point scale with the categories: "very unattractive", "unattractive", "about average", "attractive", "very attractive." I create an indicator from this original scale comparing those who are considered attractive ("attractive" or "very attractive", coded 1) to those who the interviewers consider less attractive ("very unattractive," "unattractive," and "about average"). In addition to those listed above, I also control for age measured in years for each wave.[7]

[6] Though these measures are self-reported, calculating BMI in Add Health based off these responses has been demonstrated to be highly reliable (r = 0.92; Bauldry, et al. 2016). Using a single wave of Add Health, Hussey et al. (2015) found that height, weight, and derived body mass index were highly reliable.

[7] Age ranges for each individual wave is listed above under "Data" heading.

Analytical Strategy

I analyze my data with a latent growth curve model (LGCM) using the structural equation modeling framework.[8] Growth curve models have become increasingly relevant for researchers interested in developmental trajectories over time (Duncan and Duncan 2009; Andruff, et al. 2009) because of the flexibility they afford researchers interested in longitudinal studies (Curran, et al. 2010). Among other things, they allow for partially missing data, unequally spaced time-points, as well as the inclusion of time-variant and time-invariant covariates (Acock 2013; Preacher, et al. 2008). Further, they allow researchers to estimate within-person variability in between-person patterns of change when at least three repeated time-points are available (Acock 2013).

In linear growth curve models, a latent intercept and slope factor are used to capture the initial level and trajectory of the repeated outcome variable (self-esteem). The intercept is held constant for all individuals across time (see Figure 1) by fixing their factor loadings on the repeated outcome (Duncan and Duncan 2009; Preacher, et al. 2008). In my model, the intercept is interpreted as the population average initial level of self-esteem of the sample at Wave I. The latent slope factor represents the average magnitude and direction of the sample's trajectory over time (Preacher, et al. 2008). Unlike the intercept factor, the slope factor is fixed based on the wave, with Wave I as the reference point (Acock 2013). If the waves in Add Health were equidistant, I would assign Waves I, II, and III the values 0, 1, and 2 respectively. However, because Add Health captured Wave I in 1995, Wave II in 1996, and Wave III in 2001, I must account for the unequal distribution of time between waves. The SEM framework of the growth curve model allows me the flexibility to account for non-equidistant time periods by assigning

[8] My analytical strategy closely follows Acock's (2013) LGCM strategy.

Wave I, II, and III the values 0, 1, and 6 respectively (Andruff, et al. 2009; Acock 2013). The latent slope and intercept factors each have a mean, variance, and error term associated with them (Preacher, et al. 2008). The variance of each is forced to be equal and the two factors are allowed to covary (Duncan and Duncan 2009). This is represented with the double-headed arrow between the factors in Figure 1.

Once the model is identified, time-invariant covariates are included to the model and specified to directly predict the intercept and slope factors (Curran, et al. 2010). In modeling them to predict the growth factors, time-invariant variables attempt to explain some of the random-effects variance (Acock 2013). In my analyses these covariates include gender, race, and parental income at Wave I. In the final model, time-variant covariates are included. Unlike time-invariant covariates which are modeled to directly predict the latent intercept and slope factors, time-variant covariates directly predict the repeated outcome while controlling for the growth factors (Curran et al. 2010). These covariates include my key independent variable, weight perception, as well as body mass index, attractiveness, and age.

The full growth curve model, for the repeated measured variable y_{ti}, is written as:

$$y_{ti} = \lambda_{0t}\eta_{0i} + \lambda_{1t}\eta_{1i} + \gamma_{2t}x_{ti} + \varepsilon_{ti}$$

where λ_{1t} is the factor loading for time, in my analyses 0, 1, and 6 respectively, and λ_{0t} is the factor loading which is constant and equal to 1 for all individuals. The individual latent intercept and slope is represented by η_{0i} and η_{1i} respectively, where $\eta_{0i} = \nu_0 + \gamma_0\zeta_i + \xi_{0i}$ and $\eta_{1i} = \nu_1 + \gamma_1\zeta_i + \xi_{1i}$. Here γ_0 and γ_1 represent the time-invariant variables, modeled to directly predict the growth curve factors. The effect of the time-varying covariates x_{ti} are represented by γ_{2t} and random-error is captured with ε_{ti} (Hox and Stoel 2005).

In all my growth curve analyses, following Acock (2013), missing data is dealt with using full-information maximum likelihood estimation. This specification allows for missing values, unlike listwise deletion, and utilizes all observed variables for each available case (Cham, et al. 2017).[9] Model fit is assessed and presented with the models' χ^2 , RMSEA (root mean square error of approximation), CFI (comparative fit index), TLI (Tucker Lewis index), and the total variance explained by the model (R^2).

[TABLE 1 HERE]

Results

Table 1 presents the descriptive statistics for the variables used in my analyses across each wave. Self-esteem remain relatively high, and slightly increases, over time (4.09, 4.19, and 4.23 respectively) descriptively suggesting that self-esteem generally increases through adolescence into young adulthood. The distribution of the key independent variable, weight perception, remains fairly stable across the first two waves, but in Wave III, when respondents are between the ages of 18 and 27, weight perception is slightly higher. Between Waves II and III, 4 percent fewer respondents identify as "underweight" and 6 percent more identify as "overweight." Body mass index follows a similar pattern. There is almost no change in BMI between Waves I and II, but between Waves II and III 8 percent fewer respondents are "underweight," 14 percent fewer are a "healthy weight," around 12 percent more are "overweight," and around 10 percent more are "obese." These trends suggest that adolescents become increasingly overweight into young adulthood and their weight perception follows a

[9] In analyses not shown, I reran my models using listwise deletion. In these analyses, I had 2,795 observations and the magnitude and pattern of significance matched the results from the models using full-information maximum likelihood estimation.

similar, though less pronounced, trend.

[TABLE 2 HERE]

Before using a linear growth curve model to test average self-esteem trajectories, I must first verify my preliminary findings from Table 1 that self-esteem follows a linear trajectory throughout my time-points and that there is a significant amount of variability around these trajectories. Doing so establishes whether a LGCM is an appropriate model for analyzing self-esteem. In Table 2, I present the coefficient estimates and variance around the latent slope and intercept for the linear growth curve. There is significant variance around the slope and intercept factors, suggesting significant variability in the starting level and growth rate of self-esteem.[10] Between 1995 and 2001, adolescents' self-esteem increases 0.02 points on average each year. The average intercept – or self-esteem at Wave I – is 4.11. Using these coefficients, I can estimate average self-esteem levels at different time points with the equation: $SelfEsteem_{est} = 4.11 + (0.21 * t)$, where the estimated self-esteem is equal to the intercept (4.11) plus the slope (0.21) multiplied by time t (Acock 2013). Using this equation, the expected average self-esteem for my sample in 1995 is 4.11[11] and 4.24 in 2001[12], resulting in an estimated 3.16% increase in self-esteem on average between Wave I and Wave III.

[TABLE 3 HERE]

In Model 1 of Table 3, I present the results from the growth curve model of weight

[10] Stata does not report significance levels for the error variance, because a variance cannot be less than 0. However, because the approximate confidence intervals do not include 0, I know that there is significant variance around the growth factors (Acock, 2013). In Table 2, the p-values of the variance were calculated in Stata using the equation: `2*ttail((e(N)-2),abs(B/SE))` where `e(N)` is the sample size, `B` is the coefficient estimate, and `SE` is the standard error for each growth factor.

[11] $4.11 = 4.11 + (0.21 * 0)$

[12] $4.24 = 4.11 + (0.21 * 6)$

perception on self-esteem and every covariate. The model shows good fit to the data.[13] Gender is significantly associated with the intercept and slope factors, suggesting that young men have higher starting levels of self-esteem and less steep self-esteem trajectories through adolescence compared to women. Race is significantly associated with the slope factor, though this association is small. This suggests that relative to whites, other racial categories have slightly steeper, positive self-esteem trajectories through adolescence.

This model also includes the key variable of interest, subjective weight perception. Recall that weight perception is one of the time-variant covariates, which are modeled to directly predict the repeated self-esteem measure while controlling for the intercept and slope growth factors (Curran, et al. 2010). Results indicate that subjective weight perception is negatively and significantly associated with self-esteem trajectories. For each unit increase in weight perception - an increasingly heavier perception - an adolescent's self-esteem is expected to decrease by 0.07, lending support to my second hypothesis. While subjective weight perception is significant, BMI's association with self-esteem is very small and its effect is insignificant. From this, I conclude that weight perception influences adolescent and young adults' self-esteem trajectories, even after controlling for objective body measures.

In Model 1, gender is significantly associated with the growth factors. This means that gender is significantly associated with both self-esteem at Wave I and the trajectory of self-esteem into and through young adulthood. Previous literature suggests that the relationship between changes in weight perception and self-esteem may also differ by gender. For these reasons, I split my sample and analyze men and women separately. Doing so allows me to address H_3 by exploring the unique ways the association between self-perceived weight and self-

[13] Aside from the χ^2 and the TLI, the RMSEA and the CFI are within the limits of good fit.

esteem is patterned by gender. Table 3 Model 2 shows the coefficient estimates of a LGCM for only young men, and Model 3 shows the coefficient estimates for only young women.

First, we turn to the growth factors of Model 2 and Model 3. In the male sample, the intercept and slope are 4.61 and 0.03 respectively. In the female sample, the intercept factor is lower than men's (4.40), while the slope is slightly higher (0.04). These results provide more detail to what I found in Table 3: men have higher starting levels of self-esteem on average but increase at a lesser rate than women. These results indicate that as adolescents age, men and women's self-esteem levels begin to converge as they enter adulthood.

Second, looking at my key independent variable across both Models 2 and 3, subjective weight perception is negatively and significantly associated with self-esteem trajectories for both young men and women. However, in line with H_3, these processes vary by gender. A unit increase in weight-perception – an increasingly heavier perception – affects women more negatively than men. For men, each unit increase in weight perception - an increasingly heavier perception – is associated with a 0.02 decrease in self-esteem. For women, this effect is greater: for each unit increase in weight perception, self-esteem is predicted to decrease by 0.11. These findings are in line with past research which finds women's sense of self is more closely tied to their physical bodies, compared to men (Furnham, et al. 2002).

Models 2 and 3 also include additional body-related controls to isolate the effect of self-perceived weight on self-esteem trajectories. Interestingly, BMI is not significantly associated with self-esteem for young women or young men. This means that objective weight does not exert a significant effect on the self-esteem trajectories for either young men or women, but the subjective assessment of one's weight does. Furthermore, by adding these additional time-variant controls, I conclude that weight perception influences adolescent and young adults' self-esteem

trajectories, even after controlling for objective body measures.

Discussion/Conclusion

Previous research shows that body dissatisfaction (Grossbard, et al 2009) and BMI are negatively associated with self-esteem, particularly among females (Kiviruusu, et al 2016), and that weight perception is negatively associated with self-esteem during the core years of adolescence (Ali, et al. 2010), but less is known regarding how subjective weight perception affects self-esteem trajectories during the transition to adulthood using nationally representative data. My research addresses this gap by analyzing the self-esteem trajectories of adolescents and young adults and tests whether subjective weight perception is significantly associated with these trajectories. I did so by modeling nationally representative data of adolescents and young adults with a latent growth curve model. Additionally, I investigated whether the relationship between weight perception and self-esteem operates similarly for young women and men. My study yields four key conclusions. First, consistent with previous literature, and in line with H_1, I find that self-esteem increases linearly through adolescence and young adulthood. Second, this linear pattern differs by gender. I investigated this both by including gender as a predictor in my model and by dividing my sample into a male subsample and a female subsample. When I added gender as a predictor, it was significantly associated with both the intercept and slope of self-esteem. Splitting the sample confirmed these findings: young men have higher starting levels of self-esteem, but women have a more positive rates of change in self-esteem. Third, I find that subjective weight perception is significantly and negatively associated with self-esteem through adolescence and young adulthood, even after controlling for relevant covariates, including BMI. This finding confirms H_2. Finally, the association between self-perceived weight and self-esteem is patterned by gender. Whereas an increasingly heavier weight-perception is associated with a

0.02 unit decrease in self-esteem for men it is associated with a 0.11 unit decrease in self-esteem for women. This finding confirms H_3.

Like all analyses, this project has limitations that should be acknowledged. First, because Add Health only captures self-esteem in three waves, I am not able to test if self-esteem follows a non-linear trajectory (i.e. quadratic or cubic) through adolescence and young adulthood (Preacher 2010; Preacher, et al. 2008). Past researchers have found that in a small sample of early teenagers, age has a curvilinear relationship with self-esteem (Baldwin and Hoffman 2002). Future researchers with more repeated measures should investigate if self-esteem trajectories are non-linear in adolescence and young adulthood using nationally representative samples, and if weight perception affects this trajectory differently across time. Second, my study only investigates the relationship between subjective weight perception and one mental health outcome: self-esteem. Following Ali (2010), researchers should investigate how weight perception affects additional mental health outcomes such as depression and suicidal ideation. Like my research, however, future researchers should extend this analysis into young adulthood. The transition from adolescence to adulthood has been described as "the most pivotal turning point in the life course" (Uhlenberg and Mueller 2003: 130) which, despite its importance, has remained relatively understudied with regards to psychopathology and mental health outcomes (Schulenberg, et al. 2004). Third, future researchers should investigate how an *inaccurate* weight perception (Martin, et al. 2009) is associated with mental health trajectories during adolescence and young adulthood. An inaccurate weight perception would be, for example, underweight individuals who think they are overweight or overweight individuals who think they are a healthy weight. Such analyses could further my analysis of weight perception by uncovering the

potentially negative or buffering effect an inaccurate self-perceived weight has on mental health trajectories.

Findings from this study demonstrate that how adolescents *perceive* their weight has a strong and significant association with self-esteem trajectories, and importantly, that this relationship is stronger for young women than men. These results are relevant for those interested in issues of body dysmorphia, as well as for practitioners and policy makers interested in the mental health and development of youth in America. There is growing awareness of the negative influence the dominant "thin ideology" (Spinetta 2013) is having on individuals and the ways in which obesity is stigmatized in the United States (Puhl and Heuer 2009; Puhl and Heuer 2010). Adolescents have access to broader variety of media today than ever before, and these outlets both consciously and unconsciously uphold certain body types as ideal while simultaneously stigmatizing others (Stice, et al. 1994; Puhl and Heuer 2010). It is likely that the results of my analyses capture some of the consequences these structural factors have on the self-esteem trajectories of adolescents. In a 2018 article, journalist Amanda Mull critiques large corporations who profit from body positive movements and agrees that structural factors, such as covert and overt media messages and corporate marketing campaigns, largely account for the negative emotions people have toward their bodies. She critiques large corporations for perpetuating beauty ideals and then profiting from the body positive movement without acknowledging their role in the predicament. She puts her critique this way:

> "What brands and individuals alike are less enthusiastic to talk about is how having a noncompliant body…impacts someone's life, how...*external conditions* affect someone's sense of self-worth, and *how corporate interests have long benefited from and upheld the structural forces that create inequality*" (Mull 2018, emphasis mine).

She goes on to remark on how these messages are internalized by individuals: "There is no inherent unhappiness to…[anything] that American beauty standards have long treated as a

problem. *The conditions under which we loathe ourselves are socially constructed, but in practical terms, they're very real*" (Mull 2018, emphasis mine). This point manifested in my findings through the strong and negative association I found between self-perceived weight and self-esteem trajectories, especially for young women. To echo Mull (2018), the conditions under which we classify our bodies are socially constructed, but very real in their consequences. In addition, my findings suggest that young women's self-esteem may be especially vulnerable to these beauty standards, because though they report lower levels of self-esteem initially their self-esteem trajectory is still more negatively affected by their weight perceptions compared to young men. Given the connection between adolescents' self-esteem and other measures of success during the transition to adulthood, it is not unreasonable to assert that the beauty standards established and promoted by advertising industries, television and movie productions, and other popular media outlets are internalized by members in society and in turn have strong and negative consequences.

Therefore, alongside efforts to address rising obesity rates, practitioners should actively address adolescents' subjective interpretations of their weight and consider holistic approaches to health that address both objective and subjective attributes of weight. Studies that investigate direct intervention programs are a potential way forward. In one study (O'Dea and Abraham 2000), adolescent participants of a year-long program directed at improving self-esteem and body-related issues experienced persistent positive change. Of importance, of those with low self-esteem and who were at risk for developing eating disorders, the participation in the program was associated with a significantly lower drive for thinness, greater body satisfaction, and a decreased importance of physical appearance on self-esteem (O'Dea and Abraham 2000).

Such programs could serve to actively reorient young people's attitudes about their bodies and improve their mental health trajectories into adulthood.

Additionally, there are a growing number of both formal organizations, such as *The Body Positive*, as well as social media movements[14] dedicated to addressing these issues. In the words of *The Body Positive* (2018), these groups strive to create "a lively, healing community that offers freedom from suffocating societal messages that keep people in a perpetual struggle with their bodies." Programs, such as those assessed by O'Dea and Abraham (2000) and the more recent example of *The Body Positive*, as well as grassroot movements sprouting across social media, should be investigated by scholars to access their effectiveness.

In the end, it is about balance. On the one hand, obesity holds long-term health risks that deserve our attention. On the other hand, in focusing our attention on the risks of obesity we have, perhaps unconsciously, further stigmatized nonconforming body sizes, which my findings indicate may disproportionately negatively impact young women's sense of self. A balanced message acknowledges the health risks obesity holds while upholding the value of all people, no matter their size. The mental health processes I have looked at in this article are subjective, meaning they are evasive and difficult to identify. Nevertheless, they are simultaneously socio-structural, originating and perpetuated by larger structural factors. Given the independent and negative influence subjective weight perception has on self-esteem through adolescence and young adulthood, public efforts to address these issues should be supported to promote healthy life course development.

[14] For example, hashtags such as #nondiet includes, at the time of writing, over 40,000 body positive posts by Instagram users. Popular Instagram accounts such as the popular *Eff Your Beauty Standards,* founded by body positive activist, Tess Holiday, "encourages people of all sizes to proudly share body positive photos" (Pasternak, 2018).

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Table 1. Descriptive Statistics of Self-Esteem and Independent Variables

	Wave I				Wave II				Wave III			
	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
Time Variant Variables												
Self-Esteem	4.09	0.64	1.00	5.00	4.19	0.61	1.50	5.00	4.23	0.56	1.00	5.00
Self-Perception												
Underweight	0.16	0.37	0.00	1.00	0.16	0.37	0.00	1.00	0.12	0.33	0.00	1.00
About Right	0.53	0.50	0.00	1.00	0.54	0.50	0.00	1.00	0.51	0.50	0.00	1.00
Overweight	0.30	0.46	0.00	1.00	0.30	0.46	0.00	1.00	0.36	0.48	0.00	1.00
Body Mass Index												
Underweight	0.16	0.36	0.00	1.00	0.12	0.33	0.00	1.00	0.04	0.20	0.00	1.00
Healthy Weight	0.65	0.48	0.00	1.00	0.66	0.48	0.00	1.00	0.52	0.50	0.00	1.00
Overweight	0.14	0.35	0.00	1.00	0.15	0.36	0.00	1.00	0.27	0.44	0.00	1.00
Obese	0.06	0.23	0.00	1.00	0.07	0.26	0.00	1.00	0.17	0.38	0.00	1.00
Attractive	0.51	0.50	0.00	1.00	0.50	0.50	0.00	1.00	0.50	0.50	0.00	1.00
Age	15.01	1.59	11.00	20.00	15.92	1.60	11.00	21.00	21.39	1.60	18.00	27.00
Time Invariant Variables												
Race												
White	0.63	0.48	0.00	1.00								
Black	0.21	0.41	0.00	1.00								
Other Race	0.16	0.36	0.00	1.00								
Gender												
Male	0.48	0.50	0.00	1.00								
Female	0.52	0.50	0.00	1.00								
Parental Income ($)	49,863	59,577	0.00	999,000								
Observations					2795*							

Source: National Longitudinal Study of Adolescent to Adult Health Waves I II & III
Time-Invariant Variables Constant Across Waves
*Listwise Deletion Omits Cases with Missing Observations

Table 2. Coefficient Estimates for Latent Intercept and Slope

	Intercept Factor	Slope Factor
Mean	4.11***	0.02***
	(0.01)	(0.00)
Variance	0.24***	0.00***
	(0.01)	(0.00)
Observations	6493	

Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Model Fit: $\chi^2(1)$ 43.02, $p < .000$; RMSEA = 0.08; CFI = 0.983; TLI = 0.949; R^2= 0.81
Source: The National Longitudinal of Adolescence to Adult Health Waves I-III

Table 3. Coefficient Estimates for Self-Esteem on Subjective Weight Perception and Other Covariates

Covariates	Model 1		Model 2 (Males)		Model 3 (Females)	
Time Variant						
Weight Perception	-0.07***	(0.01)	-0.02*	(0.01)	-0.11***	(0.01)
Body Mass Index	0.00	(0.01)	0.00	(0.01)	0.00	(0.01)
Attractiveness	0.05***	(0.01)	0.06***	(0.01)	0.04**	(0.01)
Age	-0.02***	(0.00)	-0.02***	(0.01)	-0.01	(0.00)
Time-Invariant on Slope						
Male	-0.02***	(0.00)				
Race	-0.01**	(0.00)	0.01	(0.00)	0.01*	(0.00)
Parental Income	-0.00	(0.00)	-0.00	(0.00)	-0.00	(0.00)
Time-Invariant on Intercept						
Male	0.18***	(0.00)				
Race	-0.01	(0.01)	-0.02	(0.01)	-0.01	(0.01)
Parental Income	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Latent Slope and Intercept						
Slope	0.05***	(0.00)	0.03***	(0.01)	0.04**	(0.00)
Intercept	4.40***	(0.05)	4.61***	(0.00)	4.40***	(0.08)
Observations	6493		3141		3352	

Standard error in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Model 1 Fit: $\chi^2(37)$ 189.30, $p < .00$; RMSEA = 0.03; CFI = 0.947; TLI = 0.931; $R^2 = 0.17$
Model 2 Fit: $\chi^2(36)$ 96.65, $p < .00$; RMSEA = 0.02; CFI = 0.941; TLI = 0.926; $R^2 = 0.06$
Model 3 Fit: $\chi^2(36)$ 157.96, $p < .00$; RMSEA = 0.03; CFI = 0.927; TLI = 0.908; $R^2 = 0.13$
Source: The National Longitudinal of Adolescence to Adult Health Waves I-III

Figure 1. Linear Contingent Growth Curve Model for Self-Esteem with Covariates