Junk in the Trunk: Evaluating the Relationship between Body-Mass Index and Interracial Dating for White Adolescent Females

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Abstract

KIVAN POLIMIS: Junk in the Trunk: Evaluating the Relationship between Body-Mass Index and Interracial Dating for White Adolescent Females
(Under the direction of Kyle Crowder & Anthony Perez)

Increasing racial diversity in the United States coupled with changing cultural norms toward interracial dating fuels the growth in interracial couples. The purpose of this paper is to examine the factors that influence heterosexual interracial adolescent dating, specifically the link between an adolescent’s body mass index (BMI) and the likelihood of that individual entering an interracial relationship. I hypothesize that white adolescent women with BMI levels that align with the body type preferences of black men will date interracially at higher rates than their peers with BMI levels that are not consistent with preferences common among black men. Using data from the National Longitudinal Survey of Adolescent Health (Add Health), I estimate the effects of BMI on the likelihood of an individual entering an interracial relationship through binomial logistic regression analysis. I find that for white female adolescents, as BMI increases the likelihood of dating black men increases as well.
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Introduction

In 2000, the United States Census allowed citizens to select two or more racial categories for the first time. At that time, 2.3% of Americans or 7 million people selected a multi-racial combination (U.S. Census 2000). Ten years after the introduction of multi-racial categories, the 2010 Census documented the explosive growth of the multi-racial community. The 2010 Census found that in less than a decade the multi-racial population increased by 32%; meanwhile the 50% increase in multiracial children made that demographic the fastest growing youth group in the country (U.S. Census 2010; Humes et al. 2011; Saulny 2011). Additionally, a PEW Research Center report of 2008 American Community Survey marriage data concluded that “a record 14.6% of all new marriages in 2008 were between spouses of a different race or ethnicity from each other” (Passel, Wang, and Taylor 2010).

The dramatic growth of the multiracial population intensifies the importance of understanding the factors that affect an individual’s likelihood to date interracially. Demographic trends indicate that individuals that identify themselves as black and white the largest bi-racial group (US Census 2010). These trends and the growth in black-white coupling illustrate the significant erosion of social barriers between blacks and whites in the U.S. Black-white race relations have a legacy as the most contentious racial divide in this
country (Omi and Winant 1994), but the expansion in black-white interracial coupling is a substantive statement that the social distance between these two groups is minimizing.

This paper focuses on interracial dating between adolescent black males and adolescent white females. The focus on black-white dating is rooted in the idea that this relationship “bridges the widest racial divide in U.S. social life” (Wright, Ellis, and Holloway 2011). Interracial dating and relationships are important to understand because they are the mechanism that precede the rise of black-white multi-racial demographic. Growing societal acceptance of multiracial children and interracial dating has changed the nature of interracial dating (Root 2001). In the past, external attitudes strongly influenced internal preferences toward interracial dating (Dovidio, Kawakami, and Gaertner 2002). Previous research on interracial dating was primarily concerned with attitudinal measures such as “what will my friends think?” and “what will my parents say?” (Nash 1997). Traditionally, these attitudinal measures were very strong indicators of an individual’s likelihood of entering and maintaining an interracial relationship (Lampe 1982; Wang, Kao and Joyner 2006). New public opinion data shows that social attitudes toward black-white interracial dating have changed dramatically with 94% of individuals born after 1977 agreeing that “it’s all right for blacks and whites to date” (PEW Research 2007).

Research on interracial dating in adulthood and young adulthood is plentiful (Fujino 1997; Powers and Ellison 1995; Levin, Taylor and Caudle 2007), but research on interracial dating in adolescence is scarce. Focusing on interracial dating in adolescence should lessen the influence of broad attitudinal biases on interracial dating. Today’s adolescents have not grown up in the aftermath of nationwide desegregation and other racially charged political and social discourses. As a result, younger generations tend to hold more favorable views of
interracial dating than their older peers (PEW Research 2007). Additionally, examining
interracial dating in adolescence will assist the development of projections about the future of
the interracial population. Understanding the factors associated with interracial dating will
provide clues about the future composition, socioeconomic characteristics, and health
dynamics of mixed race while highlighting the individual-level characteristics that increase
or decrease the likelihood of interracial coupling.

As social acceptance of interracial dating has increased, the dominant internal
preferences (such as physical attraction, marital quality of mates, and parental potential of
mates) that individuals consider when dating individuals from their same racial group may be
increasingly relevant for interracial dating. A common measure for physical attractiveness
that adult interracial dating studies use is an evaluation of body type preferences through
pictorial instrument tests. Researchers have not used similar tests with adolescent to
determine the role of body type preferences in adolescent interracial dating. The body type
preference literature consistently shows that on average black men prefer a thicker body type
in their ideal mates than white males (Glasser at al. 2009; Greenberg and LaPorte 1996;
Desmond et al. 1999). The purpose of this study is to investigate the link between body type
(measured with BMI) and interracial dating among adolescents to adjudicate between
competing theoretical arguments related to this association.

My research contributes to literature on socio-cultural divisions in body type
preferences in several ways. By comparing distinct theoretical arguments for the persistence
of interracial dating, this paper may provide theoretical insight into the origins of both body
type preferences and interracial dating. Through the analysis of actual romantic behaviors
(the dating history of adolescents in Add Health), this study is able to empirically address
conclusions rarely analyzed in body type preference literature. Typically, the body type literature uses pictorial instruments or qualitative data to demonstrate socio-cultural divisions but the use of actual dating behavior will be a strong test of the existence of socio-cultural divisions in ideal body type outside of an experimental or academic setting. Additionally, the inclusion of measures such as self-esteem and mental health assessments along with socioeconomic status are an effective method to assess potential causes of spuriousness and redundancy in the body type preferences literature. While a variety of body type studies incorporate either mental health assessments or socioeconomic status as controls, few studies incorporate both measures in analytical models as a means of clarifying the relationship between body types and dating behavior.

**Theory and hypotheses**

There are at least two theoretical reasons to believe that high levels of BMI may be positively associated with the tendency to date black men. One theoretical perspective claims that women with high levels of BMI date black men because black men prefer thicker women (henceforth known as the “preference theory”). Another theoretical perspective argues that women with high levels of BMI date black men as a manifestation of their low self-esteem and their inability to date more socially desirable men (henceforth known as the “self-esteem theory”). These theoretical arguments lead to the same expectation for the focal association (white females with higher levels of BMI will have an increased likelihood of dating black men), but imply different functional forms for the focal association, and the role of self-esteem in interracial dating. Before evaluating the factors that will differentiate between the competing theoretical claims, I provide an account for each perspective.

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1 A third theoretical perspective: “BMI homophily” is discussed in the conclusion.
Developing black male preference for thicker body types

Several assumptions underpin the preference theory that women with high levels of BMI are more likely to date black men. One of these assumptions states that body type preferences vary by race and gender. Body type preference literature describes the significant differences in preferences for black and white men. (Glasser et al. 2009; Greenberg and LaPorte 1996; Molloy and Herzberger 1998). For example, Glasser et al. (2009) find that African-American and Latino men are significantly more likely than white men to report a preference for women with “thick or large” bodies. This conclusion is buttressed by a Greenberg and LaPorte (1996) study that asked African-American and Euro-American men to rank a series of female silhouettes of varying sizes in order of attractiveness. Greenberg and LaPorte found that, on average, Euro-American men chose significantly thinner figures than African-American men.

The use of pictorial instruments to visually demonstrate the socio-cultural divisions in ideal body size is also popular in research on ideal body types (Desmond et al. 1989; Collins 1991). Desmond et al. (1989) used a pictorial instrument test for adolescents to investigate differences in ideal body type and observed that adolescent black males are 1.9 times more likely than their white peers to select a larger ideal female hip/buttocks size as well as 1.7 times more likely to select a larger ideal female thigh size. Collins (1991) also used a pictorial instrument test that asked preadolescent children to select body figures that represented an ideal self. Collins’ research showed that blacks chose heavier ideal self-figures than whites. Even at the very early ages of 6 and 7, children displayed an awareness of socio-cultural norms for body type. The internalization of body type norms appears to strengthen as children mature into adolescence and begin dating. Ideal body type and body type preference literature indicate a strong black male preference for thicker body types.
Black men have a greater preference for thicker women and are more willing to pursue high-BMI women than white men. White women with high levels of BMI have a higher probability of entering interracial relationships than lower-BMI white women because they are more likely to be pursued by black men.

*Relationship between self-esteem and BMI*

The self-esteem theory that the relationship between BMI and interracial dating is driven by the low self-esteem of white women is based on a combination of research on BMI and self-esteem with research on self-esteem and sexual behavior. Past research has consistently documented evidence of an inverse relationship between BMI and self-esteem where high levels of BMI are correlated with low assessments of self-esteem. Pesa et al. (2000) find evidence that high levels of BMI are linked to low self-esteem and an increased risk of depression. These authors used Add Health data and found that overweight adolescents seem to suffer from low self-esteem because of dissatisfaction with body image. Crosnoe et al. (2008) analyze Add Health data to determine the connection between body size and high school friendship networks. These authors find that BMI predicted friendship formation even after controlling for correlates of both body size and friendship dynamics. Their results illustrate that as BMI increased the likelihood of being nominated by schoolmates as a friend decreased and point to potentially negative psychosocial effect for individuals with high BMI.

Higher levels of BMI may also affect the ability of adolescents to enter into relationships and may influence inter-personal development later in life. Heiland and Ali (2010) use Add Health to examine the relationship between obesity and dating for adolescent females and demonstrate the existence of a dating “penalty” for obese adolescents. These
authors found that obese adolescent females were 17% less likely to have been in a romantic relationship in the last 18 months than their non-obese counterparts. It is unclear what the long-term effects of the decreased likelihood to enter a romantic relationship are for obese adolescents, though the authors hypothesize that the dating “penalty” will broadly affect perceptions of self-worth and success in marriage markets.

Self-esteem and sexual behavior

A propensity to engage in risky sexual behaviors is related to lower self-esteem and poorer performance on mental health assessments. Brooks et al. (2002) claim that self-reported symptoms of depression are significantly correlated with risky behaviors such as a higher likelihood to engage in fighting and use tobacco as well as risky sexual behaviors like non-use of birth control. Additionally, individuals with high levels of BMI are more likely than their lower BMI peers to engage in risky behaviors because of low self-esteem and/or depression. Akers et al. (2009) analyze the 2005 Youth Risk Behavior Surveillance survey to test the claim that adolescent females with high levels of BMI engage in riskier sexual behaviors. These authors found that sexually active adolescents that perceive themselves to be overweight were less likely to report condom use during their last sexual encounter.

Although risky sexual behaviors traditionally include practices such as failure to use contraception, some risky sexual behaviors are tied to the social acceptance of an individual’s actions. Because of traditional stigma, interracial dating is sometimes viewed as a socially risky behavior (Gallagher 2002; Schoepflin 2009). Using Add Health data, Wang et al. (2006) find that adolescents involved in interracial relationships are less likely to meet their partner’s parents and reveal their relationships to their peers or their own parents. Concealing one’s participation in an interracial relationship underscores the risk individuals assume
when they date interracially. The relationship between high levels of BMI, self-esteem/mental health assessments and risky sexual behaviors are the foundation for the self-esteem theory that women with high levels of BMI have a higher likelihood of dating black men.

As stated above, I predict that white adolescent females with a BMI that is consistent with black male preferences will enter into interracial relationships at higher rates than their peers.

**Hypothesis 1:** There is a positive association between BMI and interracial dating such that as BMI increases the likelihood of being involved in a heterosexual interracial relationship increases.

Both theoretical perspectives in this paper would be supported by evidence that confirms hypothesis 1. However, two testable relationships have the potential to adjudicate between the competing theories.

The first testable relationship examines the implied linearity of the focal association. The self-esteem theory implies that the focal association is positive and that women with the highest levels of BMI date black men at higher rates than their peers with lower levels of BMI. Alternatively, the preference theory implies that the relationship between BMI and interracial dating is curvilinear, but that women with the highest levels of BMI date black men at lower rates. There is strong evidence showing that obese women are generally stigmatized and have fewer opportunities to date (Crandall 1994; Tiggeman and Rothblum 1988). The body type preference literature has found that while black men are less likely to associate negative characteristics with obesity than white men, black men still rate obese white women as less attractive than smaller sized women (Jackson and McGill 1996; Hebl
and Heatheron 1998). The framework provided by the body preference literature suggests that there is a BMI threshold effect: as BMI increases, the likelihood of dating interracially increases to a point but then decline near BMI levels approaching obesity.

Another observable area where the theoretical perspectives offer different hypotheses is the role of self-esteem on the focal association. The self-esteem theory claims that women in interracial couples will have high levels of BMI and low self-esteem. Alternatively, the preference theory implies that the association between BMI and interracial dating will persist even after controlling for self-esteem/mental health.

*Hypothesis 2a* (preference theory): After controlling for self-esteem and mental health assessments, the relationship between a white adolescent female’s BMI and the propensity to date interracially will persist.

*Hypothesis 2b* (self-esteem theory): After controlling for self-esteem and mental health assessments, the relationship between a white adolescent female’s BMI and the propensity to date interracially will decline.

The competing accounts of self-esteem and mental health are the basis of hypothesis 2a and 2b.

Interracial dating is also the product of many environmental and individual-level characteristics and the propensity to be involved in an interracial relationship is not reducible to an individual’s BMI regardless of which theoretical perspective one favors. Understanding the extent to which school context, parental socio-economic status, mental health and age are correlated with BMI is necessary to isolate the focal relationship between BMI and interracial dating.

*Environmental and individual-level factors that influence the focal association*

*School context, parental SES and age*
Environmental characteristics may attenuate or strengthen the relationship between BMI and interracial coupling. High school dating is largely confined to an individual’s school but can also include other locations such as neighborhood schools or the individual’s neighborhood. Furthermore, the dueling effects of individuals preferring to join social groups composed of individuals with characteristics similar to themselves (tendency towards homophily) with the influence of social environment on socio-psychological predispositions confound analyses of social context (Zeng and Yie 2008). Despite the challenges in separating preference from opportunity, the ability to date black men is heavily influenced by the relative concentration of black men.

Another factor that may affect analyses of the focal association is socioeconomic status. SES may constrain the opportunity for interracial coupling in much the same way as racial composition does. Given well known links between SES and race, whites with lower SES are likely to encounter more racial diversity in their schools and neighborhoods, the main sites for adolescent dating (Williams 1999; Lillie-Blanton and Laveist 1996). Thus, adolescent white females from lower socioeconomic backgrounds may engage in more interracial relationships because of their social proximity to black men. Also, because individuals from lower socioeconomic backgrounds have higher levels of BMI due to poorer nutrition and less active lifestyles, the influence of BMI on interracial dating is confounded by SES. (Janssen et al. 2006; Wang and Zhang 2006). As a result of this relationship between socioeconomic status and BMI, interracial dating by adolescent white females may be influenced by socioeconomic status instead of the independent effect of BMI.

Lastly, the age of an individual potentially strengthens or weakens the relationship between interracial dating and BMI because individuals tend to enter more relationships as
they age so we should notice older adolescents having a higher likelihood of dating
terracially than their younger peers (Collins 2003), despite comparable levels of BMI. The
inclusion of measures that indicate relative concentration of black male adolescents in the
primary context for dating (the individual’s school), family SES, and the individual’s age
should control for the effects of environmental and individual-level factors on the likelihood
of white adolescent females dating black men.

Data

Data source and analysis sample

This paper uses data from the National Longitudinal Study of Adolescent Health
(Add Health), a school-based longitudinal study of the early life course. I focus on the results
from the in-school student questionnaire, the in-home student interview and the parent
interview for female adolescents that were enrolled in grades seven through twelve and
completed the survey’s first wave (Wave I) in 1994-1995. The focal respondents are white
female adolescents and the final sample includes 4,949 white females.

Measures

Outcome variable

The dependent variable, dating a black male, is based on three in-school questionnaire
items that asked respondents to identify the race of the three most recent individuals they
were romantically involved with. Only individuals that indicated at least one recent partner
were used in this analysis. The dummy variable dated black male took a value of “1” if the
respondent identified any one of the three most recent romantic partners as a black male.
Despite the close tie of the dated black male variable to an adolescent’s recent behavior,
there are limitations to this variable. It may be possible that there is a significant time
difference between partners such that the respondent underwent a substantial change in BMI.
As such, a white female adolescent that developed their BMI from a high value to a low value but dated interracially at the low BMI value would confound the analysis of the relationship between BMI and the likelihood of being involved in an interracial relationship. 

*Explanatory Variables*

The focal independent variable is *BMI*. An individual’s BMI consists of their weight in kilograms divided by their height in meters squared [weight (kg)/height (m²)]. I use interviewer reports of a respondent’s height and weight in order to remove respondent bias from the calculation of BMI. Interviewers used a high capacity digital bathroom scale to record an individual’s weight and a steel tape measure to record an individual’s height (Carolina Population Center 2010). Add Health reports an individual’s height and weight in the United States customary system as opposed to the metric system necessary for BMI calculation. I converted individuals weight in pounds to kilograms (weight in kilograms = weight in pounds * .454) and height in inches to height in meters (height in meters = height in inches* .0254). Individuals were not included in the analysis if the interviewer failed to report their weight and/or height because a BMI value must have these two components. Failure to report a height and/or weight for a respondent could be interviewer machine error, coding error or the respondent could have refused or physically been unable to have their height and weight recorded by the measuring devices. Additionally, the interaction term *bmisquared* is created by squaring a respondent’s BMI; *bmisquared* is used to test the linearity of the relationship between BMI and the likelihood of interracial dating.

The use of BMI as a proxy for body types separates this study from the broader body type preference literature. Although BMI generally relates well to an individual’s body type

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2 219 white females were dropped because of missing height and/or weight information.
because it incorporates and individual’s height and weight, the specific distribution of the weight is important for testing body type preferences. It is certainly possible for two individuals with the same BMI to look radically different if their weight is distributed differently. However, there is emerging research to believe that there is a high correlation between body type and BMI. Farinah (2005) documents a strong relationship between BMI and perceptions of body shape (underweight, normal weight, overweight) while Wells et al. (2007) find that BMI is strongly correlated with three-dimensional body shape at statistically significant levels ($\alpha=.05$). Wells et al. revealed that a woman’s weight had correlations of .8, .85 and .92 with her chest, waist, and hips; respectively. Additionally, a woman’s height had correlations of .08, .04, and .14 with her chest, waist, and hips; respectively. This paper is written with the belief that the relationship between body type and BMI is very strong.

The racial composition of a high school was created by using the race program code available on the CPC website (CPC 2010). The CPC program specifies that respondents are placed in only one racial category even if reported multiple racial categories. Responses were allocated hierarchically: All respondents with an affirmative response to the question “Are you of Hispanic or Latino origin” were designated as Hispanic regardless of race. Next, all non-Hispanic respondents that marked “black or African-American” were designated black even if they identified additional racial categories. All non-Hispanic respondents that identified “White” alone were designated white (all other racial groups were excluded from analysis).

After coding the race responses, the percentage of each racial group in a given school was tabulated. The variable percent black uses Add Health’s school roster data and indicates the percentage of students in a school who reported their race as black or African-American.
The respondent’s age was constructed from an in-school questionnaire item that asked respondents to report their age in years.

During the in-home interview, surveyed students were administered a Feelings Scale assessment that closely resembles The Center for Epidemiologic Studies Depression (CES-D) screener. First constructed in 1977, the original CES-D (reproduced in Appendix 1) measures somatic and affective symptoms of depression in samples of adults (Radloff 1977). The CES-D evaluation records the frequency of depressive symptoms reported by respondents by utilizing twenty elements of depressive symptomology including loss of appetite, feeling of hopelessness and guilt, and deficient psychomotor skills. Individuals are asked to record how often they have felt a wide range of symptoms in the previous week. Although developed for use with adults, the CES-D has been used widely in research on adolescents as well (Radloff 1999). In the Wave I sample, surveyed students completed an approximate CES-D with the exception of the item “Sleep was restless” (See Appendix 2 for a full description of all items in this approximate CES-D).

Each item in the original CES-D questionnaire was scored from zero to three based on the frequency assigned to their response. For example, individuals received a score of one for responding “sometimes”, two for “a lot of the time”, and three for “most/all of the time”. In order to preserve the consistency of the feelings scale, high scores are indicative of more psychological distress and some items in the approximated CES-D were recoded. For instance, one question asked individuals “During the last week, how often did you feel hopeful about the future”; in this case a response of “most/all of the time” would receive a score of zero (instead of a score of three that this type of response normally receives) while a
response of “never/rarely” would receive the highest score of three, as opposed to its usual score of zero (Radloff 1977).

The CES-D equivalent scores of the questionnaire were used to create a depression score. Complete CES-D scores range from zero to sixty with a score below sixteen meaning that the individual shows no signs of depression, a score between sixteen and twenty-three corresponds with mild depression while a score greater than twenty-three denotes severe depression. I then defined a continuous variable for the presence of depression (for \(i=\text{Wave I}
\)

\[\text{depression}_i = 0 - 60\]) to analyze the relationship between adolescent depression and other variables. Multiple imputations\(^3\) were used to create depression scores for the thirteen respondents that did not complete every item of the feelings scale section in Wave 1.

The second mental health assessment is a self-esteem score based on an abridged version of the Rosenberg Self-Esteem (henceforth “RSE”) scale that asked respondents six of the ten questions typically used in a complete RSE scale (See Appendix 3 and 4). Responses to RSE questionnaire items were coded to ensure that higher scores were indicative of high self-esteem (Rosenberg 1965). Each respondent had their six responses to the abridged RSE summed and standardized to create a single score that represented the presence of high or low self-esteem (Nelson and Gordon-Larsen 2006). Additionally, multiple imputations\(^4\) were used to create self-esteem scores for 2,193 individuals that did not complete all six items of the abridged RSE. The combination of the abridged RSE self-esteem score and the abridged CES-D depression score create a multi-dimensional view of respondents’ mental health that

\(^3\) The variables age, BMI and parentsattendcollege were used to impute depression scores

\(^4\) The variables age, BMI and parentsattendcollege were used to impute self-esteem scores
help elucidate the role of a respondents’ mental health in their likelihood of entering an
interracial relationship.

Both the self-esteem and depression measures are potentially biased by reverse
causality with the datedblackmale variable. For instance, a respondent’s score on the mental
health assessment may be influenced by an (un)succesful dating experience with a black
male. The models in this paper assume that the mental health assessments influence the
dependent variable (datedblackmale), but in some instances it is possible for the dating
experience to have influenced the mental health assessments.

Multiple questionnaire items from the parent interview contributed to the proxies for
a respondent’s socioeconomic background, parents’ education and household welfare receipt.
Both measures of socioeconomic status are dummy variables. A “1” for the variable
parentsattendcollege indicates that a parent present in the household has at least a college
education. This variable considers family structure so that a respondent living in a single-
parent household but had a non resident parents complete their college education does not
have an upward bias in socioeconomic status.

Methods

Logistic Regression

I use binomial logistic regressions to evaluate the relationship between BMI and the
likelihood of being involved in an interracial relationship. In the data presented, I use
estimates from the sample with imputed data for depression scores and self-esteem scores.\textsuperscript{5}
The first model is a bivariate test of the central theory (hypothesis 1) that interracial coupling

\textsuperscript{5} The imputed and non-imputed models have similar coefficients. Some variables in the non-imputed models
do not reach the threshold for statistical significance; however, the similarities in coefficients across both
types of models show that the imputed sample is still representative of the non-imputed data. Full results of
the non-imputed models are available upon request.
is associated with BMI. It only incorporates the focal dependent variable (*dated black male*) and the focal independent variable (*BMI*). Model 2 tests the different functional form for the focal association that each theoretical perspective implies by introducing the interaction term *bmisquared*. The third model tests if any environmental and individual-level characteristics produce sources of spuriousness or redundancy in the focal association. In the fourth model, I attempt to adjudicate between the preference and self-esteem theory by adding controls for self-esteem and mental health (hypothesis 2a and 2b), this model also incorporates variables that are potential causes of spuriousness and redundancy.

**Models**

Model 1: \[ \text{Log-odds of dating black male}_i = \beta_0 + \beta_1 bmi_i + \mu \]

Model 2: \[ \text{Log-odds of dating black male}_i = \beta_0 + \beta_1 bmi_i + \beta_2 bmisquared_i + \mu \]

Model 3: \[ \text{Log-odds of dating black male}_i = \beta_0 + \beta_1 bmi_i + \beta_2 bmisquared_i + \beta_3 parentscollege_i + \beta_4 welfare_i + \beta_5 age_i + \beta_6 percentblack_i + \mu \]

Model 4: \[ \text{Log-odds of dating black male}_i = \beta_0 + \beta_1 bmi_i + \beta_2 bmisquared_i + \beta_3 parentscollege_i + \beta_4 welfare_i + \beta_5 age_i + \beta_6 percentblack_i + \beta_7 selfesteem_i + \beta_8 depression_i + \mu \]

**Findings**

The first model (Table 2, p. 30) is a test of the focal association, the relationship between BMI and the likelihood of entering an interracial relationship for white adolescent females (hypothesis 1). This model is statistically significant (p-value for the likelihood \( \chi^2 \) is .0000) and supports hypothesis 1 that there is a positive relationship between a white adolescent female’s BMI and likelihood of being involved in an interracial relationship.
Moreover, the statistical significance of the model highlights the low likelihood that the reported relationship between BMI and the likelihood of interracial dating is the result of chance. The logit coefficients are interpreted into odds-ratios by first taking the exponential of the coefficient. This value is then subtracted from one and then multiplied by 100. The resulting odds-ratio indicates that for a one unit increase in an independent variable, the odds of dating a black male increases (or decreases) by a certain percentage.

Model 1 reveals that a one unit increase in BMI increases the odds of being involved in an interracial relationship by 6%; the coefficients of this logistic regression are statistically significant at $\alpha = .05$. While the results of model 1 support hypothesis 1, the very modest effect of BMI may be related to the functional relationship between BMI and the likelihood of dating a black male. The preference theory predicts that the more accurate illustration of BMI’s effect on an adolescent’s likelihood of dating a black male is curvilinear. With this theory in mind, model 2 incorporates the interaction term $bmisquared$ to assess the linearity of the BMI effect.

Once the non-linear effect of BMI is utilized, a one unit increase in a white adolescent’s BMI corresponds to a 78% increase in the odds of dating a black male. This effect is over 10 times larger than the effect of BMI in the first model that does not consider the linearity of the BMI effect. Additionally, at high enough levels of BMI, the squared interaction term indicates that respondents’ odds of dating interracially decrease by 1% (coefficients are statistically significant at $\alpha = .05$ and $\alpha = .01$; respectively). The combination of these two variables supports the preference theory’s view of the focal association’s functional form while refuting the self-esteem theory’s claims of functional
form (Figure 1, p. 31). Model 2 is also statistically significant (p-value for the likelihood $\chi^2$ is .0060).

The third model introduces environmental and individual-level characteristics to evaluate potential causes of spuriousness or redundancy that may affect the focal association. This model supports claims that additional factors influence the likelihood of white adolescent females engaging in an interracial relationship. For example, the results show that the odds of interracial dating increase with a respondent’s age and the percentage of black students in the respondent’s school. In this model, a one unit increase in BMI corresponds with 76% odds increases in the likelihood of entering an interracial relationship which is slightly less than the 78% increase in the odds of entering an interracial relationship found in the first model. However, the odds of interracial coupling decrease. The p-value of .0000 that is associated with the likelihood $\chi^2$ indicates that Model 3 is statistically significant.

The fourth model represents an attempt to measure the self-esteem theory’s ability to explain the focal relationship between an adolescent’s BMI and their likelihood of dating interracial. Model 4 tests the claim that mental health status, specifically poor mental health and low self-esteem, explains the observed relationship between BMI and interracial dating (hypothesis 2a and 2b). The results of this statistically significant model (p-value for the likelihood $\chi^2$ is .0000) indicate that while measures of mental health diminish the probability of an individual dating interracially, BMI remains a strong predictor of interracial coupling. When two measures of mental health are introduced the predictive capability of BMI decreases by 5% in comparison to the second model that does not include controls (a one unit increases in BMI now corresponds to a 75% increase in the odds of dating a black male). The
decrease in BMI effect demonstrates that self-esteem and the prevalence of depression are minor sources of redundancy in the model.

Additionally, only the coefficient for the depression score variable was statistically significant. A one unit increase in depression score increased the odds of entering an interracial relationship (net of other variables in the model) by 4%. While this result slightly supports the self-esteem theory’s claim that a white adolescent female’s participation in an interracial relationship is affected by her self-esteem/mental health (hypothesis 2b), the bulk of the results seem to contradict the central assumption of the self-esteem argument that the focal association operates through self-esteem. Ultimately, the predictive capability of BMI remains very strong in this model and offers considerable support for the preference theory.

**Conclusion**

In this paper, I investigate the relationship between a white female adolescent’s BMI and the likelihood of that individual being involved in an interracial relationship using a large representative sample of adolescent girls from Add Health. I find that a curvilinear relationship exists between BMI and interracial dating such that as BMI increases by one unit the odds of an individual entering an interracial relationship increases by at least 75%. However, at high enough levels of BMI, increases in BMI diminished the odds interracial dating. These findings support the theoretical framework that there are socio-cultural differences in body type preferences; furthermore, these findings suggest that adolescents are actively involved in identifying body type as a factor in their dating behavior. Additional analysis revealed that mental health assessments and socioeconomic status were sources of redundancy that reduced the predictive capability of an individual’s BMI in relation to their likelihood of participating in an interracial relationship. The inclusion of measures for mental
health and SES attenuated the log odds of BMI by less than 5% in the mental health model and 5% in the socioeconomic status model. Therefore, all models produce strong support for the preference theory that white adolescents with high levels of BMI are more likely to date interracially because of a black male preference for thicker body types.

This paper’s central analytic strategy (only using female respondents) is not an explicit test of the role of body type preferences in interracial dating. For instance, none of the questions in the sample set asked respondent’s their attitudes toward interracial dating. Nonetheless, an interracial dating and body type preference story is reasonable when this study is combined with the larger body type preference literature. From the body type preference literature we know that researchers have used pictorial instrument tests to consistently demonstrate a black male preference for thicker women. This study confirms and compliments that literature by documenting the persistence of black-white interracial dating as the BMI of white female adolescents increase. As a result, this study provides behavioral support for the laboratory conclusions in the preference literature.

This study is limited by the inclusion of only adolescent females and no adolescent males in the sample. While claims about body type preference can be extrapolated from models of BMI and the likelihood of entering an interracial relationship this paper does not document the stated preferences of adolescent males. The direction of causality between a respondent’s likelihood of dating a black male and their performance on mental health assessments is another area for future research. This paper assumes that a respondent’s performance on mental health assessments are causally prior to their likelihood of dating a black male, but there may be a significant amount of cases where this direction of causality might not hold true.
Additionally, future research should attempt to address the role of BMI homophily in interracial dating. On average, black men have a higher BMI than their white peers (Flegal et al 2010). Research that documents the coupling of black men with thicker white women may be described as the coupling of individuals with higher levels of BMI. Tests for the theory of BMI homophily could run counter to or support the central theory outlined in this paper. I am unable to directly counter claims of BMI homophily because the BMI of the men that make up each interracial couple is unknown.
Table 1: Summary Statistics for Adolescent White Females

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focal Dependent Variable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dated black male</td>
<td>Respondent date a black male?</td>
<td>0.03</td>
<td>0.18</td>
</tr>
<tr>
<td><strong>Focal Independent Variable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>Respondent's Body Mass Index</td>
<td>21.88</td>
<td>4.15</td>
</tr>
<tr>
<td><strong>Additional Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Black</td>
<td>Percentage of respondent's high school that is Black</td>
<td>11.47</td>
<td>4.79</td>
</tr>
<tr>
<td>Age</td>
<td>Respondent's age in years at Wave 1</td>
<td>16</td>
<td>1.71</td>
</tr>
<tr>
<td>Depression</td>
<td>Respondent's CES-D approximation score</td>
<td>13.91</td>
<td>5.58</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>Respondent's RSE approximation score</td>
<td>20.19</td>
<td>4.98</td>
</tr>
<tr>
<td>Parent's College</td>
<td>Respondent's residential parent(s) complete college?</td>
<td>0.37</td>
<td>0.48</td>
</tr>
<tr>
<td>Welfare</td>
<td>Respondent's family receives welfare?</td>
<td>0.07</td>
<td>0.26</td>
</tr>
<tr>
<td><strong>N = 4,949</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2: Logistic Regression Predicting the Log-Odds of Dating a Black Male

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>1.06***</td>
<td>1.79**</td>
<td>1.76**</td>
<td>1.75**</td>
</tr>
<tr>
<td>BMI squared</td>
<td>.99**</td>
<td>.99*</td>
<td>.99*</td>
<td></td>
</tr>
<tr>
<td>Parent's attend college</td>
<td>0.82</td>
<td>0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welfare</td>
<td>0.74</td>
<td></td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.16*</td>
<td>1.14†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Black</td>
<td>1.03***</td>
<td></td>
<td>1.03***</td>
<td></td>
</tr>
<tr>
<td>Self-esteem score</td>
<td></td>
<td></td>
<td>.98</td>
<td></td>
</tr>
<tr>
<td>Depression Score</td>
<td></td>
<td></td>
<td>1.04*</td>
<td></td>
</tr>
</tbody>
</table>

N = 4,949

Notes: Odds Ratios Reported
* p<0.05, ** p<0.01, *** p<0.001, † p<.1
Figure 1
Predicted Log Odds of Dating a Black Male

Log Odds of Dating a Black Male

Dated black male == 0  Dated black male == 1
Appendices

Appendix 1: Original CES-D

Center for Epidemiologic Studies Depression Scale (CES-D), NIMH
Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

<table>
<thead>
<tr>
<th>Week</th>
<th>During the Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rarely or none of the time (less than 1 day)</td>
<td>Some or a little of the time (1-2 days)</td>
</tr>
<tr>
<td>1. I was bothered by things that usually don’t bother me.</td>
<td>☐</td>
</tr>
<tr>
<td>2. I did not feel like eating; my appetite was poor.</td>
<td>☐</td>
</tr>
<tr>
<td>3. I felt that I could not shake off the blues even with help from my family or friends.</td>
<td>☐</td>
</tr>
<tr>
<td>4. I felt I was just as good as other people.</td>
<td>☐</td>
</tr>
<tr>
<td>5. I had trouble keeping my mind on what I was doing.</td>
<td>☐</td>
</tr>
<tr>
<td>6. I felt depressed.</td>
<td>☐</td>
</tr>
<tr>
<td>7. I felt that everything I did was an effort.</td>
<td>☐</td>
</tr>
<tr>
<td>8. I felt hopeful about the future.</td>
<td>☐</td>
</tr>
<tr>
<td>9. I thought my life had been a failure.</td>
<td>☐</td>
</tr>
<tr>
<td>10. I felt fearful.</td>
<td>☐</td>
</tr>
<tr>
<td>11. My sleep was restless.</td>
<td>☐</td>
</tr>
<tr>
<td>12. I was happy.</td>
<td>☐</td>
</tr>
<tr>
<td>13. I talked less than usual.</td>
<td>☐</td>
</tr>
<tr>
<td>15. People were unfriendly.</td>
<td>☐</td>
</tr>
<tr>
<td>16. I enjoyed life.</td>
<td>☐</td>
</tr>
<tr>
<td>17. I had crying spells.</td>
<td>☐</td>
</tr>
<tr>
<td>18. I felt sad.</td>
<td>☐</td>
</tr>
<tr>
<td>19. I felt that people dislike me.</td>
<td>☐</td>
</tr>
<tr>
<td>20. I could not get &quot;going.&quot;</td>
<td>☐</td>
</tr>
</tbody>
</table>

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

Source: National Institute for Mental Health
Appendix 2: Add Health Wave I Modified CES-D

Section 10: Feelings Scale

How often was each of the following true during the last week?

1. You were bothered by things that usually don’t bother you. .................... H1FS1
2. You didn’t feel like eating, your appetite was poor. ..................... H1FS2
3. You felt that you could not shake off the blues, even with help from your family and your friends  H1FS3
4. You felt that you were just as good as other people. .................. H1FS4
5. You had trouble keeping your mind on what you were doing. ............ H1FS5
6. You felt depressed. ...................................................... H1FS6
7. You felt that you were too tired to do things. ....................... H1FS7
8. You felt hopeful about the future. ...................................... H1FS8
9. You thought your life had been a failure. ................................ H1FS9
10. You felt fearful. ......................................................... H1FS10
11. You were happy ......................................................... H1FS11
12. You talked less than usual. .............................................. H1FS12
13. You felt lonely. ............................................................. H1FS13
14. People were unfriendly to you ........................................... H1FS14
15. You enjoyed life. ............................................................ H1FS15
16. You felt sad. ................................................................. H1FS16
17. You felt that people disliked you. ...................................... H1FS17
18. It was hard to get started doing things. ................................. H1FS18
19. You felt life was not worth living. ................................. H1FS19

Source: National Longitudinal Study of Adolescent Health Survey, Wave I
Omitted, but contained in the original CES-D: Your sleep was restless
Appendix 3: Rosenberg Self-Esteem Scale

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel that I am a person of worth, at least on an equal plane with others.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. I feel that I have a number of good qualities.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. All in all, I am inclined to feel that I am a failure.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. I am able to do things as well as most other people.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. I feel I do not have much to be proud of.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. I take a positive attitude toward myself.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. On the whole, I am satisfied with myself.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. I wish I could have more respect for myself.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. I certainly feel useless at times.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. At times I think I am no good at all.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Scores are calculated as follows:

*For items 1, 2, 4, 6, and 7:*

- Strongly agree = 3
- Agree = 2
- Disagree = 1
- Strongly disagree = 0

*For items 3, 5, 8, 9, and 10 (which are reversed in valence):*

- Strongly agree = 0
- Agree = 1
- Disagree = 2
- Strongly disagree = 3

The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem.
Appendix 4: Add Health Wave I Modified RSE

How strongly do you agree or disagree with each of the following statements?

*Adolescent In-School Questionnaire*

1. I have a lot of good qualities ................................................. S62H
2. I have a lot to be proud of ...................................................... S62K
3. I like myself just the way I am.................................................. S62M
4. I feel like I am doing everything just right ............................... S62N
5. I feel socially accepted ............................................................ S62O
6. I feel loved and wanted ........................................................... S62P

Source: National Longitudinal Study of Adolescent Health Survey, Wave I

Omitted, but contained in the original RSE:

All in all, I am inclined to feel that I am a failure.
    I certainly feel useless at times.
    At times I think I am no good at all.
    I wish I could have more respect for myself.
References


