WEIGHT BIAS AND MINDSET IN PHYSICAL EDUCATORS

by

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THESIS

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ABSTRACT

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While physical education (PE) classes and sports teams create an opportunity to increase overweight and obese students' interest in physical activity (Price, 1990), these are settings in which such students encounter stigma from PE teachers and coaches (Bauer et al., 2004). Weight bias predicts negative psychological (Eisenberg et al., 2003) and physical (Hunger & Yomiyama, 2014) outcomes in children and adolescents, which could be offset by positive behaviors related to growth mindset in teachers. The current study examined weight bias in elementary PE teachers as well as the influence of teacher sport-related mindset on weight bias. PE teachers (*N* = 286) completed a survey assessing personality, demographics, and sport-related mindset. They viewed one of eight profiles of a 10-year-old student before rating the student's motivation, success, and personality. The profiles differed by gender, body mass index (BMI: normal vs. obese), and health habits and fitness test scores (healthy vs. unhealthy). PE teachers rated average weight students more favorably than obese students in terms of motivation and laziness. Teachers also rated healthy students as more motivated/successful, more trustworthy/intelligent, and less lazy than unhealthy students. Participants' own BMI, tenure, and personality characteristics influenced their perceptions of students, particularly those who were obese. Teachers' sport-related mindset did not play a role in their weight bias. Results highlight the need for future research on weight bias in PE teachers and interventions to reduce such bias.

Keywords: weight bias, growth mindset, physical education, children, adolescents

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DEDICATION

I dedicate this thesis to my family and friends. The women in my family are some of the strongest people I know, and they taught me that there are no limits to what I accomplish if I work hard and am passionate about what I do. To my mom, my sister Allison, and my aunt Carol – you are my biggest supporters and I appreciate all that you have done for me over the years. To my nieces Ellie, Kennedy, and Avery – thank you for looking up to me and giving me more reasons to smile and to persevere. To Grandmom – without you, none of this would be possible. I love you all and am so grateful to have you in my life!

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CHAPTER 1

INTRODUCTION

Weight bias, defined as "negative weight-related attitudes, beliefs, assumptions and judgments toward individuals who are overweight and obese" (Alberga et al., 2016, p. 1), has increased in prevalence across many settings in recent years. Andreyeva et al. (2008) report that the prevalence of weight discrimination in America increased by 66% from 1995-2005. Because the percentage of obese children and youth has tripled since the 1970s (Fryar et al., 2014) to an estimate of 18.5%[1] in 2016 (Hales et al., 2017), instances of weight bias can be expected to rise as well (Washington, 2011).

The mere fact that an individual is overweight or obese has the potential to influence how they are viewed regarding their personality. According to Swami et al. (2008), overweight individuals are seen as lazier and lonelier than thinner individuals. Obese people often face the stereotypes of being self-indulgent, insecure, weak, and having low self-esteem (Bacon et al., 2001). In a more recent study, participants viewed heavier body types as careless, disorganized, and lazy, while slimmer body types were rated as more self-disciplined and careful (Hu et al., 2018).

Weight-based assumptions of personality lay the foundation for negative behavior toward overweight and obese individuals from multiple people they encounter. For example, in a study by Puhl and Brownell (2006), overweight adults listed family members (e.g., mother, spouse, father, siblings) and friends as major sources of weight bias in their lives. Such weight bias from

[1] The CDC (n.d.) categorizes children and youth as obese if they are at or above the 95th percentile for Body Mass Index (BMI) for their age and sex. However, Hales et al. (2017) report the prevalence of obesity in youth to be 18.5%, rather than 5%. This is because the CDC categorizes children and youth based on its growth chart (i.e., what weight is expected for healthy development), not necessarily on actual percentiles based on the prevalence in the population.

family and friends was present in comments about the participants' weight and in family members' embarrassment of the participants' size. Overweight individuals are also seen as less employable (Finkelstein et al., 2007; Grant & Mizzi, 2014) than thinner applicants and are rated more negatively on evaluations of work-related dispositional traits (Larkin & Pines, 1979), which may lead to weight-based discrimination in the hiring process.

Weight bias has been implicated in health care settings as well (Ferrante et al., 2009; Hebl & Xu, 2001; Persky & Eccleston, 2011). For example, health care professionals are more likely to have negative attitudes toward overweight or obese patients and to believe that obese patients will adhere less to treatment recommendations than patients of average weight (Persky & Eccleston, 2011). Hebl and Xu (2001) found that physicians ordered more diagnostic tests for overweight or obese patients but were less patient with these individuals and were less willing to spend time with them than with average-weight patients.

Weight bias, however, does not only affect adults. Negative attitudes and behavior toward overweight children and adolescents can come from peers and family members (Eisenberg et al., 2003; Lydecker et al., 2018; Neumark-Sztainer et al., 1998), teachers (Eakin, 2018), and health care professionals (Neumark-Sztainer et al., 1999). Because weight-based teasing has been associated with outcomes such as low self-esteem, body dissatisfaction, depressive symptoms, and suicidal ideation and attempts in youth (Eisenberg et al., 2003), the current study aimed to further explore weight stigma exhibited by PE teachers. Specifically, I focused on physical educators' biased attitudes and behavior toward obese students, as weight stigma in PE class has the potential to affect the way these students are treated by their peers and the way they relate to physical activity in the future (Peterson et al., 2012).

Weight Bias Against Overweight and Obese Children and Adolescents

Weight Bias at Home

One of the most prevalent places in which a child or adolescent may face weight bias is their own home. For example, overweight students often report being teased about their weight by family (Eisenberg et al., 2003; Neumark-Sztainer et al., 1998), whether the teasing was meant to be hurtful or not. While Neumark-Sztainer et al. (1998) found that family members were more likely to stigmatize adolescents unintentionally by using comments that were meant to be helpful, such comments were still viewed as hurtful by the adolescents.

While there is less research on children reporting experiences of weight stigma in the home, researchers have begun assessing explicit and implicit weight bias in parents. In a recent study of more than 600 parents conducted by Lydecker et al. (2018), 93% of participants moderately or strongly agreed with at least one explicit weight bias item. For instance, parents believed that obese children were less tidy or sociable and more self-conscious than non-obese children. Participants in the same study also showed implicit weight bias, assigning more negative words to obese children and more positive words to thinner children in an Implicit Association Test (IAT). Because of the strong influence parents and family members have on children in the home, weight bias from family members has the potential to negatively affect overweight and obese children and adolescents.

Weight Bias at School

While overweight and obese children and adolescents often experience weight-related teasing at home, students rate school (rather than home or public/community settings) as the setting in which the most weight stigma is experienced (Neumark-Sztainer et al., 1998). In a study conducted by Neumark-Sztainer and colleagues (2002), 30.0% of girls and 24.6% of boys

reported being teased by peers because of their weight, with 6.8% of girls and 4.6% of boys indicating that they experienced weight stigma from peers *at least* once a week. Results of a different study concluded that students perceived weight status to be a primary reason that peers were bullied (Puhl et al., 2011). Furthermore, Rex-Lear et al. (2019) found that students were less likely to want to play with a peer who was overweight and more likely to rate overweight targets as less smart, less popular, and sloppier than medium-weight or thin targets.

According to Taylor (2011), weight-based teasing experiences are present in multiple places within the school setting (e.g., classrooms, cafeteria, playground, locker rooms). However, they may be concentrated in physical activity settings (Peterson et al., 2012). For example, after surveying 1,555 students from two different schools, Puhl and colleagues (2011) found that 84% of participants reported observing their overweight peers being teased during physical activities. These findings are important to consider, as these environments can be a place for overweight and obese students to develop a healthier relationship to physical activity (Peterson et al., 2012) and prevent further health problems associated with obesity.

While peers have been documented as a major source of weight-based teasing in schools, teachers also show weight bias toward students who are overweight or obese (e.g., Kenney et al., 2017; Neumark-Sztainer et al., 1999; Price et al., 1987). One study found that teachers believed overweight students were less tidy, less likely to succeed, and more emotional than their peers of average weight (Neumark-Sztainer et al., 1999). Kenney and colleagues (2017) reported that some teachers believed obese students to be more likely to struggle academically because they did not want to participate or draw attention to themselves. Interestingly, teachers in the same study indicated that obese students were more likely to be academically successful because their obesity led to poor social lives, and thus more time to focus on academic pursuits. Both of these

findings, while on somewhat different sides of the spectrum, imply that teachers may hold weight biases toward obese students in the classroom.

Weight bias in physical educators (i.e., teachers and coaches) has been demonstrated in multiple studies (e.g., Bauer et al., 2004; Greenleaf & Weiller, 2005). PE teachers rate overweight students as possessing lower levels of social reasoning, physical skills, and cooperation skills compared to average weight students (Greenleaf & Weiller, 2005). In a study conducted by Bauer and colleagues (2004), overweight middle school students reported receiving negative comments from their PE teachers about their athletic ability. Furthermore, physical educators expect more from their normal weight students than from their overweight and obese students (Greenleaf & Weiller, 2005). Biased attitudes toward overweight and obese students have even been found in college students training to become physical educators (O'Brien et al., 2007), indicating that these beliefs may be present before physical educators actually begin their careers. Because physical activity settings such as PE class have the potential to influence how overweight students relate to physical activity (Peterson et al., 2012), the current study aimed to examine weight bias in physical educators.

Most of the studies aimed at measuring weight bias in PE teachers have done so using explicit anti-fat attitudes scales and Implicit Association Tests (IATs). According to Project Implicit (2011), the IAT "measures the strength of associations between concepts ... and evaluations (e.g., good, bad) or stereotypes (e.g., athletic, clumsy)" (para. 1). While IATs are used often in research, there are a number of documented flaws with the tests, including arbitrary cut-off scores for "strong" associations, low test-retest reliability, and a high dependence on contextual and environmental factors (Azar, 2008). Additionally, Anselmi et al. (2013) found that a preference for thin people did not necessarily mean an anti-fat bias when specifically using

the Weight IAT. Instead, the association between thin preference and anti-fat bias depended largely on the meaning of the thin preference to the respondent, which differed by the weight of the respondents. The more experimental nature of the current study was an attempt to measure implicit attitudes while also correcting for IAT limitations.

Gender Differences in Weight Bias Experiences

While both boys and girls endure weight-based teasing from peers and family, there are gender differences in weight bias experiences. Girls report more weight-based teasing overall (Goldfield et al., 2010; Haines et al., 2006; Neumark-Sztainer et al., 2002; Warkentin et al., 2017). This gender difference stands true whether the teasing comes from peers or family members (Neumark-Sztainer et al., 2002). According to Taylor (2011), girls may be subject to more weight bias than boys because girls' bodies are monitored more closely. For example, coaches are more likely to recommend weight loss for girls than for boys (Griffin & Harris, 1996; Harris & Foltz, 1999). Based on past research findings, obese girls were expected to be rated more negatively than obese boys in this study.

Individual Factors Influencing Weight Bias

Why are certain individuals biased against those who are overweight and obese? Research suggests that there are specific personal factors influencing whether an individual will hold weight biases, including their own weight status. Specifically, some research has shown that people who are overweight tend to have lower implicit weight bias (Marini et al., 2013). In a study by Schwartz et al. (2006), those with a lower body mass index (BMI) showed higher implicit and explicit weight bias, as they were more likely to rate overweight people as lazy and less motivated and were more likely to prefer thin people. However, Rex-Lear and colleagues (2019) found that heavier children actually showed more weight bias than did thinner children.

Previous research has not reached a consensus about the direction of the relationship between an individual's BMI and their level of weight bias; therefore, I hypothesized that there would be a significant relationship between teacher BMI and weight bias, but I did not hypothesize a specific direction of the relationship.

The BMI of PE teachers may not be the only factor influencing whether they hold negative biases toward overweight and obese individuals. The amount of time they have been teaching may also influence the amount of weight bias they exhibit. In a study by O'Brien et al. (2007), physical education majors in their third year of the program showed significantly more implicit weight bias than those who were in their first year of the program. Therefore, the present study examined the relationship between length of time in the profession and levels of weight bias. Specifically, I hypothesized that PE teachers who had been teaching longer would have higher weight bias than those who were newer to the profession.

In addition to pointing out factors that influence specific biases about overweight and obese individuals, research suggests that certain personality characteristics predict whether someone will be more likely to hold biases and prejudiced beliefs in general. For instance, openness to experience predicts lower levels of anti-immigrant prejudice (Hodson et al., 2009) and generalized prejudice (Akrami & Ekehammar, 2012). Similarly, agreeableness is negatively associated with prejudice in general (Akrami & Ekehammar, 2012; Graziano et al., 2007) and predicts lower levels of weight bias (Jackson et al., 2016). Given previous findings, I expected that PE teachers higher in agreeableness and openness to experience would show less weight bias.

Mindset

According to Dweck (2007), there are two different mindsets that may have an impact on the school climate in general as well as in sports and PE classes. Someone with a *growth mindset* endorses a view that individuals can improve their abilities and increase achievement if they work hard and receive help from others. Conversely, someone with a *fixed mindset* believes that basic traits are not able to be improved and that talent is the sole requirement for success (i.e., hard work is not required to become successful). Within the context of education, Dweck (2007) states that a growth mindset leads students to believe that they can accomplish new tasks, while a fixed mindset causes students to fear failure and not put forth effort to try something new. Researchers have recently begun to explore the concept of mindset in sports and in the classroom.

Mindset in Schools

Growth and fixed mindsets have been studied in students and teachers alike. A growth mindset in students is associated with positive outcomes regarding performance and other learning processes. For example, students higher in growth mindset score higher on standardized tests (Claro et al., 2016; Good et al., 2003) and get better grades (Aronson et al., 2002; Blackwell et al., 2007) than those lower in growth mindset. Furthermore, higher growth mindset predicts more academic enjoyment and engagement (Aronson et al., 2002) as well as more motivation in the classroom (Blackwell et al., 2007). Finally, students higher in growth mindset respond better to obstacles (Dweck, 2010) and use more self-improvement strategies to repair their self-esteem (Nussbaum & Dweck, 2008) compared to students higher in fixed mindset.

Some research on teacher mindset has found that growth mindset in teachers directly influences student outcomes (McKinney, 2018), while other researchers assert that mindset

indirectly affects student outcomes by influencing the ways in which teachers interact with and teach their students (Haimovitz & Dweck, 2017). According to McKinney (2018), higher growth mindset in teachers predicts higher student self-efficacy and math performance. However, other studies have shown that teachers' growth mindset predicts higher work engagement (Zeng et al., 2019) and persistence (Rissanen et al., 2019), which may then lead to better outcomes for students. Furthermore, teachers higher in growth mindset focus on mastery goals (Park et al., 2016; Schmidt et al., 2015) and give more honest critical feedback (Rissanen et al., 2019) that is more beneficial to students than comfort-oriented feedback (Rattan et al., 2012). Because teacher mindset has the potential to influence how teachers interact with and teach their students, the current study examined growth and fixed mindsets in PE teachers.

Mindset in Sports

The concept of mindset has recently been studied in the context of sports. In youth, a growth mindset (also known as incremental beliefs about athletic ability) predicts greater enjoyment of and motivation for physical activity compared to those with a fixed mindset, or entity beliefs (Biddle et al., 2003). Similarly, having a growth mindset in sports and physical activity settings is associated with higher performance, task orientation, persistence, and interest (Brady & Alleyne, 2018).

Until now, research on mindset in physical activity has focused mainly on specific sports and on coaches. For instance, Haselhuhn and Burton (2013) outline the importance of a Growth Hitting System (GHS) in baseball. They assert that using this growth mindset-based system encourages hitters to focus more on skill mastery and appreciation of hitting rather than on the sheer number of base hits they get. In terms of coach mindset, Chase (2010) found that a growth-based leadership mindset in coaches predicted more effectiveness and success as a leader.

However, mindset research has yet to focus more specifically on the mindset of PE teachers and how this might influence student outcomes in the PE classroom. Because growth mindset in PE class has the potential to push students outside their comfort zone and promote resilience (Mallen & Grenville-Cleave, 2018), this study aimed to explore PE teacher sport-related mindset and its possible links to weight bias. Specifically, I expected that PE teachers with a higher growth mindset would exhibit less weight bias, and those with a higher fixed mindset would exhibit more weight bias.

Current Study

The purpose of the current study was to examine weight bias/stigma in physical educators, including factors that may influence their biases, such as student gender, teacher personality, and teacher mindset. Puhl and Latner (2007) define *weight stigma* as, "negative weight-related attitudes and beliefs that are manifested by stereotypes, bias, rejection, and prejudice toward children and adolescents because they are overweight or obese" (p. 558). Because it goes beyond biased attitudes to include negative behaviors such as rejection, the current study employed this definition for both *weight bias* and *weight stigma*.

Outcome measures for the present study included PE teachers' ratings of student motivation and success, how much time they would be willing to spend with the student to help them learn something new, and how likely they would be to want the student in their PE class or on their sports team. Participants also rated students on a number of personality characteristics. Generally speaking, "negative ratings" in the following aims referred to:

- student rated as less motivated (in PE class and in other classes) and successful (in PE class and in other classes)
- teachers less willing to spend time with student

- teachers less likely to want student in PE class and on sports team
- student rated as less self-disciplined, self-confident, careful, intelligent, and trustworthy
- student rated as lazier, quieter, and more disorganized

Aim 1

Aim 1 examined whether there would be a main effect of student BMI on teachers' ratings of students and the amount of time teachers would be willing to spend with students.

Hypothesis 1a. Hypothesis 1a stated that PE teachers would rate obese students as less motivated and less successful than average weight students in PE class and in other classes.

Hypothesis 1b. Hypothesis 1b stated that PE teachers would be less likely to be willing to spend time helping obese students and would be less likely to want obese students in their classes or on their sports teams compared to non-obese students.

Hypothesis 1c. I hypothesized that obese students would be rated as less self-disciplined, self-confident, careful, intelligent, and trustworthy than students of normal weight. Obese students would also be viewed as lazier, quieter, and more disorganized than students of average weight.

Aim 2

Aim 2 examined whether student BMI would interact with student gender or student health/fitness profiles to affect teachers' ratings of students.

Hypothesis 2a. I hypothesized that there would be an interaction between student BMI and student gender, such that obese girls would be rated more negatively than obese boys.

Hypothesis 2b. Hypothesis 2b stated that there would be an interaction between student BMI and student health/fitness profiles, such that the negative ratings of average weight students would be stronger for students with poor health habits and lower fitness test scores. I predicted

that there would not be a relationship between health/fitness profiles and my outcome measures for obese students. That is, obese students would be rated more poorly than average weight students regardless of their health/fitness profiles.

Aim 3

Aim 3 examined whether PE teachers' sport-related mindset would be a significant moderator of the relationship between student BMI and teachers' ratings of students.

Hypothesis 3a. Hypothesis 3a stated that the association between student BMI and negative ratings would be stronger in PE teachers higher in fixed mindset compared to those lower in fixed mindset and that the association would be weaker in PE teachers higher in growth mindset compared to those lower in growth mindset.

Hypothesis 3b. I hypothesized that PE teachers higher in growth mindset would be willing to spend more time with obese students than PE teachers higher in fixed mindset.

Aim 4

Aim 4 examined whether individual differences of PE teachers would predict their ratings of students and willingness to spend time helping students.

Hypothesis 4a. I hypothesized that participant personality would predict weight bias, such that lower levels of openness and agreeableness in PE teachers would predict more negative evaluations of obese students.

Hypothesis 4b. Given the conflicting findings in previous research, this hypothesis was more exploratory and examined whether participant BMI would predict levels of weight bias. That is, the direction of the relationship was not explicitly predicted a priori.

Hypothesis 4c. I hypothesized that length of time in the profession would predict weight bias, such that the longer participants had been teaching, the more negatively they would rate obese students.

Hypothesis 4d. As a supplementary hypothesis, I predicted that PE teachers who also coached sports teams would be more likely than non-coaches to rate obese students negatively and be less willing to spend time with obese students.

CHAPTER 2

METHOD

Participants

Originally, the sample of the current study consisted of 379 elementary PE teachers. However, participants who skipped entire scales or who only consented and did not actually complete any parts of the survey were excluded from the study. This resulted in a final sample of 286 participants. To be included, participants must have been 18 years or older and certified to teach PE. Because physical activity in children and youth has the potential to start declining as early as age 7 (Farooq et al., 2018), elementary school PE teachers were recruited for the present study. The final sample was 63.3% female, and participants ranged from 23-80 years old (M = 44.19, SD = 10.80). PE teachers' BMIs ranged from 17.0-50.1 (M = 27.38, SD = 5.28). Their racial backgrounds were as follows: White/Anglo-American (81.8%), Black/African-American (7.3%), Other/Multiracial (7.0%), Asian (.7%), and Native American (.7%). A total of 2.4% of participants declined to answer the question about racial background. Of those who provided information about racial background, 17.8% further self-identified as Hispanic/Latino.

At the start of the study, only teachers in Texas were recruited. However, the sample size could not be met using only Texas teachers; thus, we then expanded the sample to include other states. Furthermore, at the beginning of the study, participants had to have been a *current* PE teacher. However, the screening question was later changed to include those who stopped teaching (e.g., retirees) but who still held a current PE teaching certificate.

Participants taught in the following states: Texas (83.2%), Arkansas (6.3%), Oklahoma (5.2%), Louisiana (.7%), New Mexico (.7%), and Other (3.8%). Of those who taught in "Other" states, 72.7% taught in Tennessee. Tenure of participants ranged from 0-44 years of experience

(*M* = 15.15, *SD* = 9.53). A total of 112 PE teachers (39.2%) also coached at least one sports team.

Participants were solicited via their school district email addresses. The researchers found teacher email addresses on school district websites and compiled them into a spreadsheet for use in the study. Participants were then emailed through Qualtrics with a letter containing information about the study and the link to the Qualtrics survey (see Appendix A for the final cover letter used). Reminders were also sent via Qualtrics about completing the survey. The survey was sent to approximately 4,314 teachers, and a total of 379 responded (8.79% response rate).[2]

As part of the present study, participants were given an opportunity to click to go to a separate Qualtrics survey at the end of the main survey in which they could enter their name, phone number, mailing address, and email address to enter a raffle. Those participants who entered their information were entered into a raffle to win one of eight $25 gift cards to a sporting goods store. The raffle drawing took place after data collection was finished, and participants were contacted via email if they won the drawing.

Care was taken to ensure that participants could not be directly linked with any of their data. Participant names and information were not collected with the survey. Additionally, Qualtrics did not link the email addresses used to send out the recruitment letter with participants' data. The raffle information was collected as part of a completely separate Qualtrics survey/link.

[2] We have no way of knowing how many teachers actually received the e-mail requests to participate because many school districts may have filtered out our e-mails.

Measures

Screening Questions

At the beginning of the survey, participants were asked if they were a certified PE teacher in Texas and if they were at least 18 years old. The first question was later changed to, "Are you a current or former Physical Education teacher at an elementary school (i.e., you hold a current Physical Education teaching certificate)?" to reflect the aforementioned changes in recruitment methods. If they answered "yes" to both questions, they were able to continue through the rest of the survey. If they answered "no" to either question, they were redirected to a thank-you page at the end of the survey.

Participant Demographics and Job-Related Information

As part of the survey, participants were asked their age, gender, sex at birth, race, ethnicity, height, and weight. Participants' BMI was calculated from their height and weight according to a formula provided by the Centers for Disease Control and Prevention (CDC, n.d.-b) and then used as a predictor variable for hypothesis 4b. Their gender and sex at birth were not used for any hypotheses for the proposed study but were included in the survey as part of a bigger project. Participants were also asked questions related to their job. They were asked how many years they had been a PE teacher, how many students they typically had in a PE class, whether their school was urban, suburban, or rural, whether they also coached a sports team, and how much influence they thought they had with students, parents, other teachers, and administrators. The questions regarding how much influence they thought they had with specific stakeholders of the school were not included in the hypotheses for this study, but instead were included as part of a bigger project. Finally, after recruitment methods changed to include

teachers outside of Texas, we added a question to the survey asking the state in which participants taught.

Personality Characteristics of Participants

Participant personality characteristics were measured using the Short Form of the Big Five Inventory-2 (BFI-2-S; Soto & John, 2017). The BFI-2-S contained 30 items assessing participants' openness, agreeableness, neuroticism, conscientiousness, and extraversion. Each of the Big Five traits was assessed using 6 items, 3 of which were reverse-coded. Participants rated how much they agreed that each statement was true for them on a 5-point Likert scale from 1 (*disagree strongly*) to 5 (*agree strongly*). Each item finished the sentence, "I am someone who…" Example items included, "I am someone who worries a lot," "I am someone who assumes the best about people," and "I am someone who keeps things neat and tidy." Appendix B shows the full scale used in the current study. After data collection, reverse-coded items were recoded. I then created a single score for each trait using the mean of the 6 items for that trait.

Mindset Regarding Sports

Participants' mindsets regarding sport ability were measured using the Conceptions of the Nature of Athletic Ability Questionnaire-2 (CNAAQ-2; Biddle et al., 2003). The CNAAQ-2 contained 12 items assessing growth and fixed mindsets, also called incremental and entity beliefs, respectively. Participants were asked to rate how strongly they agreed with statements regarding sport ability on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). There were 6 items used to assess growth mindset or incremental beliefs about sport ability. Examples of such items included, "In sport, if you work hard at it, you will *always* get better," and, "You need to learn and to work hard to be good at sport." Examples of the 6 items used to assess fixed mindset or entity beliefs about sport ability included, "To be good at sport you need

to be naturally gifted," and, "Even if you try, the level you reach in sport will change very little." See Appendix C for the full set of questions on the CNAAQ-2. After data collection, I created a single score for each type of mindset using the mean of the 6 items for that variable.

Student Evaluation Questions

Participants were randomly assigned to view one student profile, which varied by gender, health habits and fitness scores, and BMI (see *Stimuli* section for further explanation of student profiles). They were then asked how much motivation they thought the student would have in PE classes and in other classes, on a scale from 1 (*no motivation*) to 5 (*very high motivation*). They answered how much time they would be willing to spend with the student individually to help them learn something new in PE class, on a scale from 1 (*none at all*) to 5 (*a great deal of time*). Participants were then asked how much success they believed the student would have in PE class and in other classes, on a scale from 1 (*no success*) to 5 (*very high success*). Finally, they indicated how likely they would be to want the student in their PE class and on a new sports team, on a scale from 1 (*not at all likely*) to 5 (*extremely likely*).

Evaluation of Student Personality

After the student evaluation questions, participants were asked to rate the student on the following traits: self-disciplined, lazy, self-confident, disorganized, careful, quiet, intelligent, and trustworthy. Each trait was part of a slider scale from 0 to 5. Participants were given the following instructions for this portion of the survey: "Please move the slider to indicate the level to which you believe the student fits each characteristic (with higher numbers indicating that the student is more likely to be described by that characteristic)."

Other Information

At the end of the survey, participants were given an open-ended prompt that said, "What other information (if any) about the student might be important to consider, given the information provided in the student profile?" This particular question acted as part of the cover story for the study, as it asked their opinion about the student openly.

Stimuli

Participants were randomly assigned to view one of eight different student profiles. Each profile included the student's gender, age, BMI, fitness test scores, and health-related behaviors. I included fitness test scores and health habits as part of the student profiles for several reasons. First, these are student reports that PE teachers are accustomed to viewing; thus, I was able to make the student profiles look more complete without including information unfamiliar to participants. Also, because overweight and obese individuals face stigma even when engaging in healthy behaviors such as exercising (Lozano-Sufrategui et al., 2016), I included the health/fitness profiles to examine whether teachers took that information into account in their evaluations of the students. Student profiles varied based on gender (female or male), BMI (normal/average or obese), and health/fitness profile ("healthy" or "unhealthy" fitness test scores and health behaviors). The student profiles did not vary based on age; all student profiles listed the age as 10 years old. I chose this age because 70% of U.S. youth drop out of sports by age 13 (Dilworth, 2015), making late childhood/early adolescence an important developmental stage at which to study physical activity settings.

At the top of the student profiles, participants were given information about the profile and instructions to complete the questions after viewing the profile. They were told that the researchers were interested in learning more about how much information can be gleaned about a

student from typical reports physical educators may see on a regular basis. Appendix D shows the full account of information and instructions from the top of the student profiles.

Directly below the information and instructions, participants viewed the student's age and gender. They then saw a box indicating the student's BMI percentile score, with clear indicators for what is considered low, high, and very high so they could easily judge the student's BMI as average weight or obese. Appendix E shows the student BMI percentile markers. The CDC (n.d.-a) states that children and teens whose BMI is between the 5th and 85th percentile are considered to be at a healthy weight, those whose BMI is between the 85th and 95th percentile are overweight, and those whose BMI is equal to or greater than the 95th percentile are obese. For the current study, the average BMI student had a BMI in the 51st percentile and the obese BMI student had a BMI in the 96th percentile. I chose the 51st percentile for average because it was not too close to underweight or overweight; I chose the 96th percentile for the obese student because it was easily distinguishable from the average BMI student but was not at the most extreme percentile (i.e., indicative of a student which the teachers would rarely come into contact with).

Below the BMI was a chart that looked similar to those used to show fitness test scores. Participants viewed scores for the PACER, curl-ups, trunk lift, push-ups, and sit-and-reach tasks; the student's score was shown against indicators of what would be considered the "Healthy Fitness Zone" or what scores would indicate that the student "Needs Improvement." See Appendix F for the "healthy" fitness test scores and Appendix G for the "unhealthy" fitness test scores.

Finally, participants viewed the student's answers to 11 questions from the Youth Risk Behavior Survey (CDC, 2019). The subset of questions used for the current study asked about

the frequency of behaviors regarding diet (e.g., eating vegetables, drinking milk, drinking soda), physical activity (e.g., physically active for at least 60 minutes), and other health habits (e.g., hours of sleep each night, hours of TV or video games each day) in the past 7 days. Questions about diet were on a scale from "I did not [insert behavior here] during the past 7 days" to "4 or more times per day." See Appendix F for the "healthy" profile of health habits and Appendix G for the "unhealthy" profile of health habits. Decisions about what would be considered "healthy" or "unhealthy" were made based on the scoring manual for the Youth Risk Behavior Survey. In the manual, bolded answer choices indicate a potential area for concern. Therefore, I chose answers for the "unhealthy" student profile from among the bolded answer choices and answers for the "healthy" student profile from among the non-bolded choices. The answers looked like they were actually filled out by the students, as I circled the answers by hand before adding them to the student profiles on Qualtrics. The only habits on which the two (healthy versus unhealthy) profiles did not differ were how often the students ate potatoes, how many glasses of milk they drank per day, how many hours of sleep they got per night, and how many sports teams they had been on in the past year.

Procedure

Participants received an email from Qualtrics with information about the study on UTA letterhead and a link to the survey. After clicking on the link, participants were directed to the main Qualtrics survey and were asked whether they were certified to teach elementary PE and if they were at least 18 years old. If they answered "no" to either question, they were redirected to a thank-you page at the end of the survey. If they answered "yes" to both questions, they were then directed to an online informed consent document in the survey.

As part of the cover letter and informed consent, participants were told that the research team was conducting a study about characteristics of physical educators, physical educators' perceptions of students and the physical education environment, and health and fitness reports in physical education. Participants were not told the true nature of the research being conducted at the beginning of the study because the study focused on weight bias. If participants were made aware of all the details of the experimental manipulation (i.e., manipulation of the student profiles to assess weight bias), they may have responded in a way that is more socially acceptable so they could have been seen in the most positive light possible (Schlenker & Weigold, 1992).

They started the actual survey after indicating their consent. The beginning of the survey consisted of demographic and job-related questions. Participants then answered questions about sport-related mindset and personality. Qualtrics then randomly assigned participants to view one of the eight student profiles. Participants viewed all of the student information on one page of the survey, with the instructions at the top of the page. They were then asked to evaluate the student on certain personality characteristics and measures of success and motivation before indicating how much time they would spend with the student individually to help them learn something new and how likely they would be to want the student in their PE class or on their sports team.

At the end of the survey, participants read a debriefing passage. They were told that the actual nature of the study was to measure whether physical educators' attitudes and behaviors toward students change based on specific student information (i.e., student gender, BMI, fitness scores, and health habits) and teacher characteristics (e.g., personality, sport-related mindset). Participants were reminded that their data would remain anonymous and that if they chose to

withdraw their answers from the study, they could contact the researchers. Participants were then thanked and provided with a link to a separate Qualtrics survey to enter the gift card raffle.

CHAPTER 3

RESULTS

Data Screening

Prior to analysis, data for all variables involved in the analyses were screened for missing values, outliers, and distribution normality. Descriptive statistics were computed for all variables used in the analyses. Table 1 of Appendix I shows descriptive statistics for participant demographics. Tables 2 and 3 of Appendix I present descriptive statistics for participant racial characteristics. Participants' job-related information (e.g., how many students in a class) is presented in Table 4 of Appendix I. Descriptive statistics for participant personality characteristics and sport-related mindset are displayed in Table 5 of Appendix I. As for my outcome measures, Tables 6 and 7 of Appendix I show descriptive statistics for motivation-related ratings of students and ratings of student personality characteristics, respectively.

Missing Data

Originally, the sample of the current study consisted of 379 participants. However, participants who skipped entire scales or who only consented and did not actually complete any parts of the survey were excluded from data analysis. This resulted in a new total of 286 participants. A missing value analysis (MVA) was performed on the remaining data in SPSS. Results of the analysis indicated that any missing data were missing completely at random (MCAR). Thus, missing values were imputed using expectation maximization (EM) procedures in the MVA feature.

Normality and Transformations

All study variables were examined for normality prior to data analysis. There were five variables that were considerably skewed. The distribution of PE teachers' self-reported weight was positively skewed, with a skewness value of 1.46 (*SE* = 0.19). This skewness led to

participants' calculated BMI to have a skewness value of 1.12 (*SE* = 0.15). The skewness of these two variables might be expected, considering the teachers are involved in a career emphasizing physical activity and nutrition. Transforming these variables did not improve normality, so the original values were used in the analyses for this study.

The other three variables of concern were teachers' self-reported growth mindset, how likely they would be to want the student in their PE class, and how likely they would be to want the student on their sports team, with skewness values of -0.99 (*SE* = 0.14), -1.52 (*SE* = 0.14), and -0.97 (*SE* = 0.14), respectively. The nature of these variables could have led to a social desirability bias that may account for the negative skewness observed. Squaring total growth mindset scores resulted in an improved skewness value of -0.35 (*SE* = 0.14). After squaring values of teachers' likelihood of wanting the students in their PE class, skewness improved to -1.09 (*SE* = 0.14). After squaring values of teachers' likelihood of wanting the student on their sports team, skewness improved to -0.43 (*SE* = 0.14). Thus, the squared values of these three variables were used in the analyses for this study.

Preliminary Data Analysis

To reduce the number of student perception measures, two principal components factor analyses with varimax rotation were performed; one was conducted for the items related to motivation and spending time with the student, and one was conducted for the student personality items. For the seven items associated with motivation and spending time with the target student, two component factors emerged, accounting for 74.79% of the variance (see Table 8 of Appendix I). The first factor involved how motivated and successful the teacher perceived students to be. The second factor focused on how much time the teachers were willing to spend with the student and also included how likely they were to want the student in their PE class or

on their sports team. The factor scores for motivation/success and spending time were then used as outcome measures for the focal analyses.

The second principal component analysis also yielded two factors, which accounted for 66.85% of the variance (see Table 9 of Appendix I). The first factor focused on the teachers' ratings of student trustworthiness, intelligence, self-discipline, carefulness, and self-confidence. The second factor focused on the student's laziness, quietness, and disorganization. The factor scores for trustworthiness/intelligence and laziness were again used as dependent measures for the focal hypotheses.

Aims 1 and 2: Student BMI, Health Profile, and Gender as Influences on Teacher Perceptions

As part of Aim 1, I hypothesized that there would be a main effect of student BMI on teachers' ratings of students and the amount of time teachers would be willing to spend with students. Specifically, I expected teachers to rate obese students as less motivated and successful (Hypothesis 1a) than average weight students. I expected teachers to be more willing to spend time helping average weight students and be more likely to want average weight students in their PE classes and on their sports teams compared to obese students (Hypothesis 1b). I also hypothesized that obese students would be rated as less self-disciplined, self-confident, careful, intelligent, and trustworthy as well as lazier, quieter, and more disorganized than students of average weight (Hypothesis 1c).

For Aim 2, I examined whether student gender or health/fitness profile interacted with student BMI to influence teachers' ratings of students (i.e., ratings of student motivation, success, and personality), the amount of time they would be willing to spend with students, and the likelihood of their wanting students in their PE classes or on their sports teams. Specifically, I

hypothesized that there would be an interaction between student BMI and student gender, such that the negative ratings of obese students would be higher for girls than for boys (Hypothesis 2a). I also hypothesized that there would be an interaction between student BMI and student health/fitness profiles, such that the negative ratings of average weight students would be stronger for students with poor health habits and lower fitness test scores. I did not expect a relationship between health/fitness profiles and my outcome measures for obese children. That is, I expected obese children to be rated more negatively than normal weight children regardless of their health/fitness profiles (Hypothesis 2b).

A series of 2 (student BMI: average vs. obese) x 2 (student gender: male vs. female) x 2 (student health and fitness profile: healthy vs. unhealthy) between-subjects analyses of variance (ANOVA) were conducted to test the hypotheses related to Aims 1 and 2. Dependent measures included the four factor scores of motivation/success, spending time with the student, trustworthiness/intelligence, and laziness. Additionally, Bonferroni post-hoc tests were run to examine simple effects within the ANOVAs (see Appendix H for analyses of individual outcome variables). Complete results for main effects of student BMI, student gender, and student health/fitness profiles on the four factor scores are displayed in Tables 10, 11, and 12 of Appendix I, respectively. Complete results for hypothesized interactions for Aim 2 are shown in Tables 13, 14, and 15 of Appendix I.

Motivation/Success

There was a main effect of health/fitness profiles on PE teachers' ratings of student motivation and success, $F(1, 278) = 176.43$, $p < .001$, $\eta_p^2 = .39$. Teachers rated those students with healthy habits and fitness scores as more motivated/successful ($M = 0.56$, $SE = 0.07$) than students with unhealthy habits and fitness scores ($M = -0.69$, $SE = 0.07$). Additionally, teachers

rated obese students as less motivated/successful (M = -0.16, SE = 0.07) than average weight students (M = 0.03, SE = 0.07), $F(1, 278) = 4.15$, $p = .04$, $\eta_p^2 = .02$. There was also a marginally significant Student BMI x Student Health/Fitness Profile interaction, $F(1, 278) = 3.41$, $p = .07$, $\eta_p^2 = .01$ (see Figure 1 of Appendix I). As predicted, there was a simple effect of health/fitness profiles for average weight students, $F(1, 150) = 115.52$, $p < .001$, $\eta_p^2 = .44$. Average weight students with healthy habits and fitness scores were rated as more motivated/successful (M = 0.75, SE = 0.09) than average weight students with unhealthy habits and fitness scores (M = -0.68, SE = 0.10). Contrary to predictions, however, there was also a simple effect of health/fitness profiles for obese students, $F(1, 128) = 65.07$, $p < .001$, $\eta_p^2 = .34$. Teachers rated healthy obese students as more motivated/successful (M = 0.38, SE = 0.10) than unhealthy obese students (M = -0.70, SE = 0.10). There was no evidence that student gender moderated the influence of student health/fitness profiles or student BMI on motivation/success.

Spend Time with Student

There was no evidence that student health/fitness profiles were associated with PE teachers' reported willingness to spend time with the student, $F(1, 278) = 1.53$, $p = .22$, $\eta_p^2 = .01$. There was also no evidence that student BMI influenced teachers' reported willingness to spend time with the student, $F(1, 278) = 1.76$, $p = .19$, $\eta_p^2 = .01$. Additionally, there were no significant interactions.

Trustworthiness/Intelligence

There was no evidence that student BMI influenced PE teachers' ratings of student trustworthiness/intelligence, $F(1, 278) = .001$, $p = .97$, $\eta^2 < .001$. Students with healthy habits and fitness scores were rated as more trustworthy/intelligent (M = 0.32, SE = 0.08) than students with unhealthy habits and fitness scores (M = -0.37, SE = 0.08), $F(1, 278) = 35.90$, $p < .001$, η_p^2

= .11. There were no significant interactions.

Laziness

As anticipated, obese students were rated as lazier (M = 0.19, SE = 0.08) than average weight students (M = -0.09, SE = 0.08), $F(1, 278) = 6.94$, $p = .01$, $\eta_p^2 = .02$. Teachers also rated students with unhealthy habits and fitness scores as lazier (M = 0.52, SE = 0.08) than students with healthy habits and fitness scores (M = -0.43, SE = 0.07), $F(1, 278) = 79.59$, $p < .001$, $\eta_p^2 = .22$.

There was a Student Gender x Student BMI interaction for laziness, $F(1, 278) = 3.75$, $p = .05$, $\eta^2 = .01$. Contrary to my predictions, there was a student BMI simple effect for boys, $F(1, 121) = 8.62$, $p = .004$, $\eta_p^2 = .07$. PE teachers rated obese boys as lazier (M = 0.27, SE = 0.11) than average weight boys (M = -0.22, SE = 0.11). There were no significant differences in teachers' ratings of laziness for obese girls (M = 0.11, SE = 0.11) compared to average weight girls (M = 0.03, SE = 0.10), $F(1, 157) = .291$, $p = .59$, $\eta_p^2 = .002$ (see Figure 2 of Appendix I).

There was also a Student BMI x Student Health/Fitness Profile interaction for laziness, $F(1, 278) = 3.75$, $p = .05$, $\eta_p^2 = .01$. As expected, for students who were average weight, those who had unhealthy habits and fitness scores were rated as lazier (M = 0.48, SE = 0.11) than those who had healthy habits and fitness scores (M = -0.67, SE = 0.10), $F(1, 150) = 74.00$, $p < .001$, $\eta_p^2 = .33$. Contrary to predictions, however, obese students who had unhealthy habits and fitness scores were also rated as lazier (M = 0.55, SE = 0.11) than obese students who had healthy habits and fitness scores (M = -0.18, SE = 0.11), $F(1, 128) = 19.59$, $p < .001$, $\eta_p^2 = .13$. The effect size was nearly 3x as large for average weight children as for obese children. Obese students were not rated as positively when they had good health habits (i.e., less lazy) compared to average weight

students. Both average weight and obese children were rated as lazy when they had unhealthy habits (see Figure 3 of Appendix I).

In summary, there was a robust effect for student health habits and fitness scores. PE teachers rated students with better health/fitness profiles as more motivated/successful, trustworthy/intelligent, and less lazy. Additionally, the teachers reported that they were willing to spend more time with the students who had better health/fitness profiles. Student BMI did not influence ratings of willingness to spend time with students or trustworthiness/intelligence, but it was associated with perceptions of lower motivation/success and higher laziness. Furthermore, student gender and student health/fitness profiles moderated the influence of weight bias on perceptions of laziness. Health habits and fitness scores seemed to influence teachers' perceptions of laziness more for average students than for obese students. Contrary to expectations, the influence of student BMI on laziness held only for boys in this sample.

Aim 3: Growth and Fixed Mindset as Moderators

For Aim 3, I hypothesized that PE teachers' sport-related mindset would be a significant moderator of the relationship between student BMI and teachers' ratings of students. Specifically, I predicted that the association between student BMI and negative ratings of students would be stronger in teachers high in fixed mindset compared to those low in fixed mindset, and that the association would be weaker in teachers high in growth mindset compared to those low in growth mindset (Hypothesis 3a). Additionally, I hypothesized that PE teachers' sport-related mindset would predict their willingness to spend time with obese students, such that teachers high in growth mindset would be willing to spend more time with obese students than teachers high in fixed mindset (Hypothesis 3b).

A series of hierarchical moderated multiple regressions (MMR) were then conducted. Both growth mindset and fixed mindset were treated as continuous variables and were centered on the mean; student BMI was coded with unweighted effects codes (-1 for normal and +1 for obese) (see Aiken & West, 1991). Products were then computed for each interaction term. Teacher growth mindset, teacher fixed mindset, and student BMI were entered on the first step to examine the main effects of each variable. The product terms were added to the second step of the model to examine the interaction effects over and above the main effects of teacher growth mindset, teacher fixed mindset, and student BMI (see Table 16 of Appendix I). If there were any significant interactions, they were examined following procedures outlined by Aiken and West (1991) and Hayes (2018). Significant interactions were probed by examining simple effects of the predictors on the dependent variables at the 16^{th}, 50^{th}, and 84^{th} percentile values for the moderators because such percentiles represent one standard deviation below the mean, the mean, and one standard deviation above the mean for normally distributed variables (Hayes, 2018). Again, the dependent measures were the four factor scores used in the previous analyses.

Motivation/Success

Student BMI was negatively related to motivation/success, b = -0.14, SE = 0.06, $t(278)$ = -2.46, p = .04, sr^2 = .02. Additionally, teachers' fixed mindset was negatively related to motivation/success, b = -0.24, SE = 0.11, $t(278)$ = -2.15, p = .03, sr^2 = .02. There was no influence of teachers' growth mindset on motivation/success, b = 0.01, SE = 0.01, $t(278)$ = 0.68, p = .50. The interactions did not contribute over and above the main effects model, ΔR^2 = .02, $\Delta F(4, 278)$ = 1.67, Δp = .16. None of the individual interactions were significant. Although fixed mindset did not interact with student BMI [$t(278)$ = 1.22, ns], the two predictors were additive, such that teachers who had a greater fixed mindset rated obese children as less

motivated/successful.

Spend Time with Student

There was no influence of student BMI or PE teachers' fixed mindset for willingness to spend time with students, *b*s = -0.07, -0.08, *SE*s = 0.06, 0.11, *t*s(278) = -1.10, -0.74, *p*s > .27, respectively. Growth mindset was positively related to willingness to spend time with students, *b* = 0.03, *SE* = 0.01, *t*(278) = 2.34, *p* = .02, sr^2 = .02. There was no evidence that the interactions contributed above and beyond the main effects model, ΔR^2 = .01, $\Delta F(4, 278) = 0.79$, Δp = .53. None of the individual interactions were significant.

Trustworthiness/Intelligence

The main effects model was not significant for trustworthiness/intelligence, R^2 = .01, $F(3, 282) = 1.20$, *p* = .31. Additionally, the interaction model did not contribute over and above the main effects model, ΔR^2 = .01, $\Delta F(4, 278) = 0.46$, Δp = .77. None of the individual predictors were statistically significant.

Laziness

Obese students were rated as lazier than average weight students, *b* = 0.17, *SE* = 0.06, *t*(278) = 2.96, *p* = .003, sr^2 = .03. Teachers with higher fixed mindset also rated students as lazier than did teachers with lower fixed mindset, *b* = 0.21, *SE* = 0.11, *t*(278) = 1.93, *p* = .055, sr^2 = .01. The interactions did not contribute over and above the main effects model, ΔR^2 = .01, $\Delta F(4, 278) = 0.57$, Δp = .68. None of the individual interactions were significant. Again, although fixed mindset did not interact with student BMI [*t*(278) = -.473, ns], the two predictors were additive, such that students who were rated the laziest were obese and were rated by teachers who had a greater fixed mindset.

In summary, there was no evidence that either fixed or growth mindset moderated the influence of weight bias. There was, however, an additive effect for fixed mindset for motivation/success and laziness, such that target students who were rated as having the least motivation and as being the laziest were obese and were rated by teachers with higher fixed mindset. Teachers with higher growth mindset reported being willing to spend more time with the target student regardless of the student's BMI.

Aim 4a: Teacher Personality as a Moderator

As part of Aim 4, I examined whether individual differences of PE teachers would predict their ratings of students and willingness to spend time helping students. I hypothesized that teacher personality would predict weight bias, such that lower levels of openness and agreeableness in teachers would predict more negative evaluations of obese students (Hypothesis 4a).

As such, to examine whether agreeableness and openness were significant moderators, a series of MMR were again conducted. Both agreeableness and openness were continuous variables that were centered, and student BMI was again coded with unweighted effects codes (-1 for normal and +1 for obese). Additionally, product terms were again made among the predictors.

Teacher agreeableness, teacher openness, and student BMI were entered in the first step of the regression model. The product terms were entered in the second step of the model (see Table 17 of Appendix I). If there were any significant interactions, they were again examined following procedures outlined by Aiken and West (1991) and Hayes (2018). Significant interactions were again probed by examining simple effects of the predictors on the dependent variables at the 16^{th}, 50^{th}, and 84^{th} percentile values for the moderators because such percentiles

represent one standard deviation below the mean, the mean, and one standard deviation above the mean for normally distributed variables (Hayes, 2018).

Motivation/Success

Even after controlling for personality, student BMI was still negatively related to motivation/success, b = -0.16, SE = 0.59, $t(278)$ = -2.67, p = .01, sr^2 = .03. There was no evidence that agreeableness and openness uniquely contributed to motivation/success. The interactions did not contribute over and above the main effects model, ΔR^2 = .01, $\Delta F(4, 278)$ = 0.49, Δp = .74. None of the individual interactions uniquely contributed to motivation/success.

Spend Time with Student

Agreeableness was positively related to willingness to spend time with students, b = 0.36, SE = 0.10, $t(278)$ = 3.55, $p < .001$, sr^2 = .04. There was no unique effect of student BMI or teacher openness. There was a Student BMI x Openness x Agreeableness interaction, b = -0.25, SE = 0.13, $t(278)$ = -1.90, p = .06, sr^2 =.01 (see Figure 4 of Appendix I). At low levels of openness (16th percentile), there was an Agreeableness x Student BMI interaction, b = 0.27, $F(1, 278)$ = 4.49, p = .03, sr^2 = .01. More specifically, at low levels of agreeableness and low levels of openness, student BMI was negatively related to willingness to spend time with the student, b = -0.24, SE = 0.09, $t(278)$, p = .01, sr^2 = .03. In other words, teachers who were low in both agreeableness and openness were less willing to spend time with students who were obese (see top graph of Figure 4 of Appendix I).

At average levels of openness (50th percentile), there was no evidence of an Agreeableness x Student BMI interaction, b = 0.10, $F(1, 278)$ = 1.00, p = .32. Similarly, at high levels of openness, there was no evidence of an Agreeableness x Student BMI interaction, b = -0.06, $F(1, 278)$ = 0.20, p = .65 (see middle and bottom graphs of Figure 4 of Appendix I).

Trustworthiness/Intelligence

There was no evidence that the main effect model contributed to ratings of trustworthiness/intelligence, $R^2 = .01$, $F(3, 282) = 1.13$, $p = .34$. Additionally, the interactions did not contribute over and above the main effects model, $\Delta R^2 = .01$, $\Delta F(4, 278) = 0.93$, $p = .44$.

Laziness

Even after controlling for personality, student BMI was still positively related to laziness, $b = 0.18$, $SE = 0.06$, $t(278) = 3.03$, $p = .003$, $sr^2 = .03$. Agreeableness and openness did not uniquely contribute to PE teacher reports of laziness. Additionally, the interactions did not contribute over and above the main effects model, $\Delta R^2 = .003$, $\Delta F(4, 278) = 0.21$, $p = .93$.

In summary, there was little evidence that PE teacher personality buffered the influence of weight bias. Even after controlling for personality, children who were obese were rated as less motivated/successful and lazier. Additionally, teachers who were lower in both agreeableness and openness were more likely to hold a weight bias and reported that they wanted to spend less time with obese students.

Aims 4b & 4c: Teacher Tenure and BMI as Moderators

Finally, I predicted that teacher BMI would be related to levels of weight bias, but I did not explicitly predict the direction of the relationship a priori (Hypothesis 4b). I also hypothesized that length of time in the profession would predict weight bias, such that the longer participants had been teaching, the more negatively they would rate obese students (Hypothesis 4c).

Again, a series of hierarchical MMRs were conducted. Both teacher BMI and tenure were treated as continuous variables, centered, and entered into the equations; student BMI was again coded with unweighted effects codes. Finally, the product terms were created and entered on the

second step of the model (see Table 18 of Appendix I). If there were any significant interactions, they were again examined following procedures outlined by Aiken and West (1991) and Hayes (2018). Significant interactions were again probed by examining simple effects of the predictors on the dependent variables at the 16th, 50th, and 84th percentile values for the moderators because such percentiles represent one standard deviation below the mean, the mean, and one standard deviation above the mean for normally distributed variables (Hayes, 2018).

Motivation/Success

After controlling for teachers' tenure and BMI, there was still a unique influence of student BMI on motivation/success, b = -0.18, SE = 0.06, $t(263)$ = -2.91, p = .004, sr^2 = .03. The teachers' BMI was positively related to ratings of student motivation/success, b = 0.03, SE = 0.01, $t(263)$ = 2.18, p = .03, sr^2 = .02. Additionally, there was a Student BMI x Teacher Tenure x Teacher BMI interaction, b = -0.002, SE = 0.001, $t(263)$ = -2.06, p = .04, sr^2 = .01. At the 16th percentile for tenure, there was a Teacher BMI x Student BMI interaction, b = 0.04, $F(1, 263)$ = 6.08, p = .01 (see Figure 5 of Appendix I). When newer teachers were at the 16th percentile for BMI, they rated obese students as less motivated and successful than average weight students, b = -0.42, SE = 0.11, $t(271)$ = -3.72, $p < .001$ (see top graph of Figure 5 of Appendix I). When newer teachers were at the 50th percentile for BMI they still rated obese students as less motivated/successful than average weight students, b = -0.28, SE = 0.09, $t(271)$ = -3.13, p = .002. There was no evidence that newer teachers in the 84th percentile for BMI rated target students differently, b = -0.05, SE = 0.12, $t(271)$ = -0.42, p = .67. The interactions were not significant at the 50th and 84th percentiles for teacher BMI, ps > .16 (see top graph in Figure 5 of Appendix I). However, teachers at the 50th percentile for tenure still showed some weight-based differences (see middle graph in Figure 5 of Appendix I). That is, these teachers who were also at the 16th

percentile for BMI also rated obese students as less motivated and successful than average weight students, b = -0.26, SE = 0.08, $t(271)$ = -3.17, p = .002. Additionally, teachers who were at the 50th percentile for both tenure and BMI also rated obese students as less motivated and successful than average weight students, b = -0.20, SE = 0.06, $t(271)$ = -3.21, p = .002. Teachers in the 84th percentile for tenure did not exhibit these weight biases.

Spend Time with Student

There was no evidence that the main effects model was significant, R^2 = .02, $F(3, 267)$ = 1.98, p = .12. Additionally, there was no evidence that interactions contributed over and above the main effects model, ΔR^2 = .01, $\Delta F(4, 263)$ = 0.90, p = .45.

Trustworthiness/Intelligence

There was no evidence that the main effects model was significant for trustworthiness/intelligence, R^2 = .02, $F(3, 267)$ = 1.44, p = .23. There was no evidence that the interactions contributed over and above the main effects model, ΔR^2 = .01, $\Delta F(4, 263)$ = 0.49, p = .74.

Laziness

Even after controlling for tenure and teacher BMI, student BMI was still positively related to teacher ratings of student laziness, b = 0.20, SE = 0.06, $t(267)$ = 3.31, p = .001, sr^2 = 04. There was also a Teacher BMI x Teacher Tenure x Student BMI interaction, b = 0.003, SE = 0.001, $t(263)$ = 2.28, p = .02, sr^2 = 02. At the 16th percentile for tenure, there was a Teacher BMI x Student BMI interaction (see top graph in Figure 6 of Appendix I). Teachers who were at the 16th percentile for both BMI and tenure rated obese students as significantly lazier than average weight students, b = 0.41, SE = 0.11, $t(271)$ = 3.70, p < .001. Newer teachers (16th percentile) who were at the 50th percentile for BMI also rated obese students as lazier than average weight

students, $b = 0.28$, $SE = 0.09$, $t(271) = 3.13$, $p = .002$. Newer teachers who were at the 84th percentile for BMI did not differentiate between average weight and obese students on ratings of laziness, $b = 0.05$, $SE = 0.12$, $t(271) = 0.45$, $p = .65$. The interactions were not significant at the 50th and 84th percentile for teacher BMI, ps > .25 (see top graph in Figure 6 of Appendix I). However, teachers at the 50th percentile for tenure still showed some weight-based differences for laziness (see middle graph in Figure 6 of Appendix I). Teachers with average teaching tenures who were also at the 16th percentile for BMI rated obese students as lazier than average weight students, $b = 0.26$, $SE = 0.08$, $t(271) = 3.26$, $p = .001$. Additionally, teachers who were at the 50th percentile for both tenure and BMI also rated obese students as less motivated and successful than average weight students, $b = 0.22$, $SE = 0.06$, $t(271) = 3.50$, $p = .001$. Teachers in the 84th percentile for tenure did not exhibit these weight biases.

In summary, there was no evidence that teacher's tenure and BMI were associated with willingness to spend time with the students or perceptions of the students' trustworthiness/intelligence. Even after controlling for these teacher factors, student BMI was still related to teachers' perceptions of the students' motivation/success and laziness. Additionally, both the teacher's tenure and BMI moderated the influence of weight bias. Newer teachers of average weight were more likely to hold weight biases.

Supplementary Analyses: Does Being a Coach Matter?

Finally, I predicted that coaches would rate obese students more negatively than teachers who did not coach, and that coaches would be less willing to spend time with obese students compared to non-coaches. However, it was not known if there would be enough elementary PE teachers in the sample who would also be coaches; a total of 112 PE teachers (39.2%) were also coaches in my sample. Therefore, I ran supplementary exploratory analyses to examine the

possibility that coaches may be more likely to hold weight biases toward students. A series of 2 (student BMI: average vs. obese) x 2 (student gender: male vs. female) x 2 (student health and fitness profile: healthy vs. unhealthy) x 2 (teacher coaching status: coach vs. non-coach) between-subjects analyses of variance (ANOVA) were conducted.

There was no overall consistent pattern. There was only one Student BMI x Coach Status interaction for trustworthiness/intelligence, $F(1, 270) = 9.96$, $p = .002$, $\eta_p^2 = .04$ (See Figure 7 of Appendix I). Coaches ($M = -0.30$, $SE = 0.13$) rated obese students as less trustworthy/intelligent than non-coaches ($M = 0.17$, $SE = 0.17$). There was no evidence that coaches were less willing to spend time with obese children compared to non-coaches, $F(1, 270) = 1.01$, $p = .32$, $\eta_p^2 = .004$. Additionally, coaches did not rate obese students as lazier, $F(1, 270) = 1.43$, $p = .23$, $\eta_p^2 = .01$, or less motivated/successful, $F(1, 270) = 1.40$, $p = .24$, $\eta_p^2 = .01$, than did non-coaches.

CHAPTER 4

DISCUSSION

The purpose of the current study was to examine weight bias/stigma in physical educators, including factors that may influence their biases, such as student gender and health/fitness profiles, teacher personality, and teacher mindset. It was especially important to study weight bias in the physical educator population because these teachers "constitute the only profession required to deliver quality physical activity opportunities to ALL children of school age and who arguably have had the most exposure to the rising levels of childhood obesity" (Peters & Jones, 2010, p. 41). As such, PE teachers have a great amount of influence on overweight and obese children and adolescents' perceptions of and relationships to physical activity. Researching weight bias in this population could lead to the development of interventions and workshops aimed at reducing this bias and creating a more positive physical education environment for all students, especially those who are overweight or obese.

PE Teachers' Ratings of Students Based on Student BMI, Gender, and Health/Fitness

As part of Aim 1, I predicted that PE teachers would rate obese students as less motivated and successful than average weight students. This hypothesis was supported, as obese students were indeed rated as less motivated and successful than average weight students. These results coincide with previous findings that individuals who are overweight or obese are perceived as lacking in motivation (Chambliss et al., 2004; Larkin & Pines, 1979; O'Brien et al., 2007).

I also expected teachers to be more willing to spend time helping average weight students compared to obese students. The results of the current study did not support this hypothesis. Instead, student BMI did not influence teacher ratings of willingness to spend time helping students. This seems to contradict previous research suggesting that health care professionals are less willing to spend time with obese patients (Hebl & Xu, 2001) and that this follows the same

pattern of how much time they actually spend with such patients (Hebl et al., 2003). Further research is needed to determine whether teachers' responses about how much time they would spend with a student actually correspond to the amount of time spent with students in a real PE class.

Additionally, I hypothesized that obese students would be rated as less trustworthy/intelligent than average weight students. The first part of this hypothesis was not supported; teachers' ratings of student trustworthiness/intelligence did not differ based on student BMI, contradicting previous research stating that obese individuals are seen as less intelligent (Lydecker et al., 2018) than those of average weight.

Finally, I predicted that obese students would be rated as lazier than students of average weight. Results of the current study supported this hypothesis, as teachers rated obese students higher on laziness than average weight students. This is in line with previous research suggesting that individuals perceive those who are obese or overweight as lazy (Hu et al., 2018; Lydecker et al., 2018).

Overall, the hypotheses in Aim 1 were partially supported. While PE teachers may judge students based on their weight, this judgment does not seem to translate into how much time they would want to spend with the students. Interestingly, this may be due to how PE teachers see their role in motivating their students. In their responses to the open-ended question at the end of the survey (i.e., "What other information (if any) may be important to consider based on the information given?"), several participants stated that they would be able to motivate the student or that they design games and activities that engage *all* students. Therefore, while they see obese students as less motivated on their own, they may still be just as willing to spend time with such students because they believe in their own ability to motivate the students to improve.

Although not part of specific hypotheses for this study, we also found that students' health profiles (i.e., their health habits and fitness test scores) affected PE teachers' ratings of students. Specifically, healthy students were rated as more motivated/successful, more trustworthy/intelligent, and less lazy compared to unhealthy students. PE teachers' perceptions were influenced by health/fitness profiles more consistently than by student BMI and the effect sizes were larger for health/fitness profiles than for student BMI. However, this focus on habits and fitness scores may be just as concerning. In their responses to the open-ended question at the end of the survey, participants remarked that it would be important to consider the home life of the student, as they believed parents were more in charge of the students' habits than the children themselves. Thus, even though the PE teachers did not outright fault students for their lack of healthy habits, they still judged students based on information that they believed may not be under the students' control. Past research has shown that beliefs about the controllability of weight status can be an important factor in predicting individuals' weight bias (Chambliss et al., 2004). Future research should explore the possibility of such beliefs mediating the relationship between obese students' health habits and PE teachers' weight bias.

Student Gender as a Moderator

As part of Aim 2, I hypothesized that student BMI and student gender would interact to influence PE teachers' ratings of student laziness, such that obese girls would be rated as the laziest group. This hypothesis was partially supported. Student BMI interacted with student gender for teachers' ratings of student laziness, such that obese boys were rated as lazier than average weight boys. Contrary to my expectations, however, there were no significant differences in laziness ratings for obese girls compared to average weight girls. In fact, though I predicted obese girls to be rated as lazier than any other group, they were actually rated as *less*

lazy compared to obese boys. Furthermore, I expected student BMI and student gender to interact for teachers' ratings of student motivation/success, their willingness to spend time with students, and ratings of student trustworthiness/intelligence. These hypotheses were not supported; student BMI did not interact with student gender for any of these outcome measures.

Considering the amount of previous evidence that coaches exhibit more of a weight bias towards females (Griffin & Harris, 1996; Harris & Foltz, 1999), the results of the current study are somewhat surprising. It is possible that weight bias also depends on the gender of the teacher or health professional. For example, multiple studies have shown that women are less biased toward overweight and obese individuals than men (e.g., Nolan et al., 2013; Puhl et al., 2015). In a study by Peterson et al. (2015), female PE teachers were also more likely to intervene when an overweight student was being victimized. Given that the male sample in the present study only constituted 36.70% of the total sample, perhaps weight bias based on student gender was not easily detectable. Another reason for a lack of relationship between student gender and weight bias in our sample could be that the gender of the student was not as salient as some of the other information in the student profile, and thus it could have been easily overlooked by participants.

Health/Fitness as a Moderator

I also hypothesized that student BMI and student health/fitness profiles would interact to influence PE teachers' ratings of student motivation and success, such that average weight students with unhealthy profiles would be rated as less motivated and successful than average weight students with healthy profiles. Furthermore, I expected obese students to be rated as less motivated and successful than average weight students regardless of their health/fitness profiles. This hypothesis was partially supported, as student BMI interacted with health/fitness profiles for motivation/success. As expected, for average weight students, those with healthy profiles

were rated as more motivated/successful than those with unhealthy profiles. Contrary to my predictions, however, the same pattern was seen with obese students, such that those with healthy profiles were rated as more motivated/successful than those with unhealthy profiles. Furthermore, obese students with healthy profiles were rated as more motivated/successful than average weight students with unhealthy profiles, which was not expected.

Additionally, I expected PE teachers to rate unhealthy average weight students as lazier than healthy average weight students, and I expected that there would not be a difference between obese students with healthy profiles and obese students with unhealthy profiles. Again, this hypothesis was partially supported. As expected, teachers rated unhealthy average weight students as lazier than healthy average weight students. This pattern was also seen with obese students, such that unhealthy students were rated as lazier than healthy students. Interestingly, obese students with healthy habits and fitness scores were still rated much lazier than average students with healthy habits and fitness scores. These results coincide with previous literature suggesting that overweight and obese individuals experience weight bias even when they are engaging in positive health and fitness behaviors (Lozano-Sufrategui et al., 2016).

Finally, I hypothesized that PE teachers would be more willing to spend time with healthy average weight students and rate them as more trustworthy/intelligent than unhealthy average weight students. Again, I did not predict this same pattern for obese students. These hypotheses were partially supported. As expected, there were no differences between healthy and unhealthy obese students for willingness to spend time or trustworthiness/intelligence. However, contrary to expectations, there were also no differences between healthy and unhealthy average weight students for these outcomes.

PE Teachers' Fixed and Growth Mindsets Predicting Weight Bias

As part of Aim 3, I hypothesized that fixed mindset would be related to weight bias, such that PE teachers with a higher level of fixed mindset would rate obese students as less motivated/successful compared to teachers with a lower level of fixed mindset. I also predicted that PE teachers higher in fixed mindset would rate obese students as lazier compared to teachers lower in fixed mindset. These hypotheses were partially supported. Teachers lower in fixed mindset rated students as more motivated/successful and less lazy overall. While teachers' fixed mindset did not interact with student BMI, the effects of both variables were additive, such that students rated as the least motivated/successful and the laziest were obese and were rated as such by teachers higher in fixed mindset.

The possible behavioral consequences of the relationship between teachers' fixed mindset and perceptions of student motivation/success have been observed in 5th grade teachers (Leroy et al., 2007) and instructors in higher education (Vermote et al., 2020). In such cases, instructors higher in fixed mindset were less likely to use motivational approaches to teaching (Vermote et al., 2020) and more likely to create a classroom environment "less conducive to enhancing intrinsic motivation in students" (Leroy et al., 2007, p. 539). Though these examples are not specifically PE teachers and the effects were not based on student BMI, it is important to note that the fixed mindset present in the sample of the current study could lead to a more detrimental environment for all students.

Additionally, I hypothesized that teachers' fixed mindset would predict willingness to spend time with obese students and ratings of obese students' trustworthiness/intelligence. Specifically, I expected PE teachers higher in fixed mindset to rate obese students as less trustworthy/intelligent and be less willing to spend time with obese students compared to

teachers lower in fixed mindset. These hypotheses were not supported. Fixed mindset did not predict either outcome variable or interact with student BMI to predict either outcome variable.

The lack of relationship between fixed mindset and ratings of student trustworthiness/intelligence may be related to the relative importance of the traits to the teachers' specific class. If PE teachers do not see trustworthiness/intelligence as a central part of what makes students successful in PE class, it would make sense that their sport-related fixed mindset would not be related to their ratings of student trustworthiness/intelligence. Future research could examine whether perceived importance of measured traits influences actual ratings of such traits.

Also as part of Aim 3, I hypothesized that growth mindset would be related to weight bias, such that PE teachers higher in growth mindset would rate obese students as more motivated/successful, more trustworthy/intelligent, and less lazy compared to teachers lower in growth mindset. I also predicted that teachers higher in growth mindset would be more willing to spend time with obese students compared to teachers lower in growth mindset. Overall, these hypotheses were not supported. While teachers higher in growth mindset were more willing to spend time with students overall, this did not differ based on student BMI. Additionally, teachers' growth mindset did not interact with student BMI to predict any of the outcome measures (i.e., motivation/success, spend time, trustworthy/intelligence, laziness).

The lack of relationship between teachers' growth mindset and weight bias in the current study could be partly due to the nature of sport-related growth mindset itself. Specifically, it may be that sport-related growth mindset is related more to actual behavior rather than perceptions. This would also explain why growth mindset is related to willingness to spend time with students in general. When exploring PE teachers' growth mindset and weight bias in the future, researchers may benefit from developing more appropriate growth mindset questions for their

specific study. Another possible reason for the lack of relationship between growth mindset and weight bias in the current study is a restriction of range for growth mindset in my sample. Prior to transformation, growth mindset was extremely negatively skewed, indicating that one's growth mindset may have prompted them to participate to begin with. In the future, accessing a more representative sample of the full population of elementary PE teachers may help correct this restriction of range. Researchers could also provide specific scenarios to PE teachers and ask how they would respond or conduct observational studies to examine how PE teachers behave in a real-world school setting.

PE Teachers' Personality Predicting Weight Bias

As part of Aim 4, I hypothesized that teacher personality would predict weight bias, such that lower levels of openness and agreeableness in teachers would predict more negative ratings of obese students. Specifically, I expected teachers lower in openness and agreeableness to rate obese students as less motivated/successful, less trustworthy/intelligent, and lazier compared to teachers higher in openness and agreeableness. I also hypothesized that teachers lower in openness and agreeableness would be less willing to spend time with obese students compared to teachers higher in openness and agreeableness.

Hypothesis 4a was partially supported. Teachers higher in agreeableness were more likely to want to spend time with students, regardless of student BMI. However, agreeableness did not interact with student BMI to predict any of the outcome measures (i.e., motivation/success, spend time, trustworthiness/intelligence, laziness). Similarly, teachers' openness did not interact with student BMI to predict any of the outcome measures. This seems to contradict previous research suggesting that agreeableness on its own is related to lower levels

of weight bias (Jackson et al., 2016) and that openness to experience predicts lower levels of generalized prejudice (Akrami & Ekehammar, 2012).

While neither agreeableness nor openness interacted with student BMI on their own, there was an interaction between agreeableness and student BMI at low levels of openness for willingness to spend time with students. Teachers who scored low on both agreeableness and openness reported wanting to spend less time with obese students compared to average weight students. Therefore, perhaps agreeableness and openness should be considered together when researching individual differences in personality and weight bias in the future.

PE Teachers' BMI and Tenure Predicting Weight Bias

As part of Aim 4, I further predicted that PE teachers' ratings of obese students' motivation/success, laziness, trustworthiness/intelligence, and their willingness to spend time with obese students would depend on their own BMI. However, I did not explicitly predict a specific direction of the relationship. I also hypothesized that length of time in the profession would predict weight bias, such that participants who had been teaching longer would rate obese students as less motivated/successful, less trustworthy/intelligent, and lazier, and would be less willing to spend time with obese students compared to newer teachers.

These hypotheses were partially supported. Teachers with higher BMI were more likely to rate students as motivated/successful in general. However, neither teacher BMI nor teacher tenure interacted with student BMI to predict any of the outcome measures (i.e., motivation/success, spend time, trustworthiness/intelligence, laziness). The lack of relationship between teacher BMI and negative ratings of obese students is surprising, as researchers have found weight bias to be related to participant BMI in the past. Specifically, Marini et al. (2013), Puhl et al. (2015), and Schwartz et al. (2006) found that individuals with lower BMI displayed

more negative biases (both implicit and explicit) toward others who were overweight or obese, while Rex-Lear et al. (2019) found that overweight children actually showed more weight bias than their average weight peers. Furthermore, the results of the present study contradict previous findings treating weight bias as a "socialized prejudice" in which biases increase over time for individuals studying to become PE teachers (O'Brien et al., 2007). Instead, results of the current study seem to align with those of Peters and Jones (2010), who found no differences in weight bias of future PE teachers and exercise professionals based on length of time in the program or participants' own BMI categories.

While neither teacher BMI nor tenure interacted with student BMI on their own, there was a three-way interaction between the variables for motivation/success and laziness. Newer teachers who were of low or average weight rated obese students as less motivated/successful and lazier than did obese teachers. Additionally, teachers at the 50th percentile for tenure who were also of low or average weight rated obese students as less motivated/successful and lazier than did obese teachers. Therefore, perhaps teacher BMI and tenure should be considered together when researching individual differences and weight bias in PE teachers in the future.

PE Teachers' Coaching Status Predicting Weight Bias

Finally, I predicted that coaches would rate obese students more negatively than teachers who did not coach, and that coaches would be less willing to spend time with obese students compared to non-coaches. This hypothesis was partially supported, as coaches rated obese students as less trustworthy/intelligent compared to non-coaches. However, coaches were not more likely than non-coaches to rate obese students as less motivated/successful or lazier than average students. Coaches were also not less likely to want to spend time with obese students compared to non-coaches. Originally, we thought coaches may exhibit more weight bias because

they may be trying to “groom” certain students to become athletes outside of PE class. However, more research is needed to provide evidence for this specific claim.

Limitations and Future Directions

While the current study provides insight into PE teachers’ perceptions of obese students, there are some limitations to consider. First, the response rate for the survey was extremely low, with only 8.79% of contacted teachers participating. This may have happened for several reasons. For example, our e-mails may have gotten blocked by school district servers or some teachers may have left the district and no longer had access to their school district e-mail addresses. At this time, we have no way of knowing how many of the original teachers actually received the e-mail requests to complete the surveys.

Second, our sample was not fully representative of the elementary school PE teacher population in the states chosen, and this was partially because our sample was limited to include teachers from districts that clearly listed e-mail addresses on their websites. The aforementioned issues may have resulted in sampling bias. In the future, researchers may have a more representative sample if they obtain cooperation from school district administrators and send the e-mails through the district servers to avoid e-mails being blocked or school districts being excluded based on availability of e-mail addresses online. Another option would be to contact and possibly partner with the National Association for Sport and Physical Education (NASPE) or SHAPE America (Society of Health and Physical Educators, n.d.) to access more participants.

Other limitations of the present study involve some of the methods of measurement used. For example, our survey did not include measures to test whether participants paid attention to each part of the student profile (i.e., student age, gender, BMI, health habits, and fitness test scores) due to time limitations. Because of this, some participants may have scrolled past the age,

gender, or BMI and paid the most attention to the health habits and fitness test scores, or vice versa. In such cases, participants' responses to the student evaluation questions could have been based on only a part of the profile instead of all of the information provided. Additionally, as mentioned previously, the questions about sport-related growth mindset may not have captured growth mindset as a perception variable. Thus, the teachers' growth mindsets could have been more related to ideas about sports or education rather than how they would actually evaluate individual students. To improve upon these measurement issues, future surveys could include a manipulation check to make sure participants viewed the whole profile and more appropriate measures of growth mindset for the specific research questions of interest.

Future studies involving weight bias in physical educators could explore other factors that may influence the presence/prevalence of such weight bias. For example, race or ethnicity of participants and target students might be important to explore in terms of weight bias. Previous research has demonstrated a difference in body ideals and weight bias across different races or ethnicities. In a study by Krueger et al. (2014), Hispanic-American adults were more likely than Anglo-Americans to hire overweight individuals in a hiring simulation. Furthermore, Fujioka et al. (2009) found that Black college women rated thin ideals as less desirable and endorsed thinness less strongly than White college women. Finally, Wong et al. (2017) found that, although both Asian and American beauty ideals involved thinness, the American thin ideal was more based on looking physically fit, while the Asian thin ideal encouraged thinness regardless of fitness. Because one's racial or ethnic identity may influence how they view weight status, these factors have the potential to influence PE teachers' biased attitudes and behaviors toward obese students.

Other factors that should be researched in future studies of weight bias in PE teachers include participant gender (Nolan et al., 2013; Peterson et al., 2012) as well as participants' level of contact with overweight and obese individuals in their personal lives (Chambliss et al., 2004) and their beliefs about the controllability of weight status (Puhl et al., 2015). Researchers should also consider including pictures in the student profiles or providing information about the students' home lives to give a more comprehensive report to participants. Additionally, researchers should attempt to examine whether weight bias toward a fictitious student correlates with weight bias toward actual students the PE teachers encounter.

Another important avenue for future research involves exploring whether being overweight or obese actually does predict any of the outcome measures of the study. For instance, some researchers have found an association between children's BMI and their intelligence (Wraw et al., 2018; Xiao, 1995). Furthermore, there is evidence that overweight children show lower persistence and higher social problems, delinquent problems, and externalizing problems compared to children who are not overweight (Hwang et al., 2006). Hall and Goh (2017) advocate for an integrative perspective when studying stereotypes, in which researchers examine both cue validity (i.e., whether the target individual is actually exhibiting certain behaviors or traits) *and* cue utilization (i.e., how perceivers use cues to form judgments of others) to understand more about stereotype accuracy. Therefore, future researchers should attempt to distinguish between perceptions of overweight students based on bias and perceptions that may be based on real evidence. They should also consider the "conditions under which stereotypes can be accurate" (Hall & Goh, 2017, p. 8) when aiming to detect and reduce prejudice (Jussim, 2017).

Despite the limitations of the current study, it was one of the first to examine weight bias in physical educators using an experimental design rather than surveys about explicit attitudes or Implicit Association Tests. This study was also one of the first to explore sport-related mindset in PE teachers and its links to weight bias in the PE environment. Results highlight the need for future research regarding weight bias in PE teachers and possible interventions to reduce such bias in the school climate.

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APPENDIX A

STUDY COVER LETTER

Dear PE Teacher and/or Coach,

I am a doctoral student in the department of Psychology at the University of Texas at Arlington. My thesis is examining characteristics of physical educators, physical educators' perceptions of students and the Physical Education environment, and health and fitness reports in Physical Education. I will ask you questions about your personality, the Physical Education classroom environment, and mindset regarding athletic ability. I will also ask you to view a student health and fitness profile and complete evaluation questions about the student.

Your participation in this survey could help us learn more about ways to improve assessment methods in Physical Education and aspects of the Physical Education environment. By participating in this survey, you will also be helping me complete my master's thesis.

Completing this survey will take about 10 minutes. The following link will provide you with more information and take you to the survey if you wish to participate: https://uta.qualtrics.com/jfe/form/SV_b1I9iP2DjRcBXDv

As a special thank you for participating in the study, all participants who complete the online survey will have the opportunity to enter a grand prize drawing for a $25.00 gift card to Dick's Sporting Goods or Academy Sports + Outdoors. Eight winners will be chosen at random. Participants who would like to be included in the drawing for a gift card will be asked to complete a separate form to provide their e-mail address, mailing address, and phone number. By completing the separate form, your name would not be linked to any information that you provided in the survey and you would be consenting to participate in the drawing. We anticipate that there will be approximately 500 participants in our study, and we will be giving out 8 $25 gift cards.

Your answers will be completely anonymous. In other words, your answers **will not be linked to your name or any other identifiable item**. I appreciate in advance your time and cooperation in being part of my research study.

If you have any questions or concerns, feel free to contact me at abigail.heller@mavs.uta.edu.

Thanking you in advance,

Abigail C. Heller, M.Ed.
Doctoral Student
The University of Texas at Arlington
Department of Psychology

APPENDIX B

QUESTIONS FROM THE BFI-2-S

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others?* Please choose your level of agreement with each statement.

I am someone who...

	Disagree strongly	Disagree a little	Neutral; no opinion	Agree a little	Agree strongly
Tends to be quiet.	○	○	○	○	○
Is compassionate, has a soft heart.	○	○	○	○	○
Tends to be disorganized.	○	○	○	○	○
Worries a lot.	○	○	○	○	○
Is fascinated by art, music, or literature.	○	○	○	○	○
Is dominant, acts as a leader.	○	○	○	○	○
Is sometimes rude to others.	○	○	○	○	○
Has difficulty getting started on tasks.	○	○	○	○	○
Tends to feel depressed, blue.	○	○	○	○	○
Has little interest in abstract ideas.	○	○	○	○	○
Is full of energy.	○	○	○	○	○
Assumes the best about people.	○	○	○	○	○
Is reliable, can always be counted on.	○	○	○	○	○
Is emotionally stable, not easily upset.	○	○	○	○	○
Is original, comes up with new ideas.	○	○	○	○	○
Is outgoing, sociable.	○	○	○	○	○
Can be cold and uncaring.	○	○	○	○	○
Keeps things neat and tidy.	○	○	○	○	○
Is relaxed, handles stress well.	○	○	○	○	○
Has few artistic interests.	○	○	○	○	○
Prefers to have others take charge.	○	○	○	○	○

Is respectful, treats others with respect.	○	○	○	○	○
Is persistent, works until the task is finished.	○	○	○	○	○
Feels secure, comfortable with self.	○	○	○	○	○
Is complex, a deep thinker.	○	○	○	○	○
Is less active than other people.	○	○	○	○	○
Tends to find fault with others.	○	○	○	○	○
Can be somewhat careless.	○	○	○	○	○
Is temperamental, gets emotional easily.	○	○	○	○	○
Has little creativity.	○	○	○	○	○

APPENDIX C

QUESTIONS FROM THE CNAAQ-2

Please indicate your level of agreement with the following statements regarding your beliefs about ability in sport.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
You have a certain level of ability in sport and you cannot really do much to change that level.	○	○	○	○	○
To be successful in sport you need to learn techniques and skills, and practice them regularly.	○	○	○	○	○
Even if you try, the level you reach in sport will change very little.	○	○	○	○	○
You need to have certain 'gifts' to be good at sport.	○	○	○	○	○
You need to learn and to work hard to be good at sport.	○	○	○	○	○
In sport, if you work hard at it, you will always get better.	○	○	○	○	○
To be good at sport, you need to be born with basic qualities which allow you success.	○	○	○	○	○
To reach a high level of performance in sport, you must go through periods of learning and training.	○	○	○	○	○
How good you are at sport will always improve if you work at it.	○	○	○	○	○
It is difficult to change how good you are at sport.	○	○	○	○	○
To be good at sport you need to be naturally gifted.	○	○	○	○	○
If you put enough effort into it, you will always get better at sport.	○	○	○	○	○

APPENDIX D

STUDENT PROFILE INFORMATION AND INSTRUCTIONS

The researchers are interested in learning more about how much information we can glean about a student from typical reports physical educators may see on a regular basis.

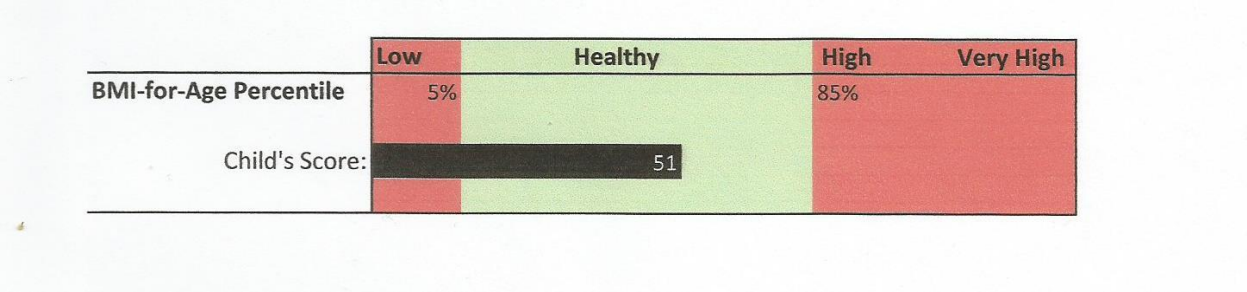
Below you are provided with demographic information, BMI, and fitness test scores for a 5th grade student. You are also provided with the student's answers to the Youth Risk Behavior Survey, indicating how often they engage in specific health-related behaviors. The researchers are using reports from multiple students for the current study. However, due to time constraints, you have been randomly assigned to view and evaluate the profile of only one student.

Please view the following information about the student and complete the subsequent evaluation questions.

APPENDIX E

STUDENT BMI MARKERS

Normal/Average Weight



Overweight/Obese

APPENDIX F

"HEALTHY" STUDENT FITNESS TEST SCORES AND HEALTH HABITS

1. During the past 7 days, how many times did you drink **100% fruit juices** such as orange juice, apple juice, or grape juice? (Do **not** count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)
   A. I did not drink 100% fruit juice during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

2. During the past 7 days, how many times did you eat **fruit**? (Do **not** count fruit juice.)
   A. I did not eat fruit during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

3. During the past 7 days, how many times did you eat **green salad**?
   A. I did not eat green salad during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

4. During the past 7 days, how many times did you eat **potatoes**? (Do **not** count french fries, fried potatoes, or potato chips.)
   A. I did not eat potatoes during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

5. During the past 7 days, how many times did you eat **other vegetables**? (Do **not** count green salad, potatoes, or carrots.)
   A. I did not eat other vegetables during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

6. During the past 7 days, how many times did you drink a **can, bottle, or glass of soda or pop**, such as Coke, Pepsi, or Sprite? (Do **not** include diet soda or diet pop.)
   A. I did not drink soda or pop during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

7. During the past 7 days, how many **glasses of milk** did you drink? (Include the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)
   A. I did not drink milk during the past 7 days
   B. 1 to 3 glasses during the past 7 days
   C. 4 to 6 glasses during the past 7 days
   D. 1 glass per day
   E. 2 glasses per day
   F. 3 glasses per day
   G. 4 or more glasses per day

8. During the past 7 days, on how many days were you physically active for a total of **at least 60 minutes per day**? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

9. On an average school day, how many hours do you spend watching TV and/or playing video games?
   A. I do not watch TV or play video games on an average school day
   B. Less than 1 hour per day
   C. 1 hour per day
   D. 2 hours per day
   E. 3 hours per day
   F. 4 hours per day
   G. 5 or more hours per day

10. During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups.)
   A. 0 teams
   B. 1 team
   C. 2 teams
   D. 3 or more teams

11. On an average school night, how many hours of sleep do you get?
   A. 4 or less hours
   B. 5 hours
   C. 6 hours
   D. 7 hours
   E. 8 hours
   F. 9 hours
   G. 10 or more hours

APPENDIX G

"UNHEALTHY" STUDENT FITNESS TEST SCORES AND HEALTH HABITS

3. During the past 7 days, how many times did you eat **green salad**?
   A. I did not eat green salad during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

4. During the past 7 days, how many times did you eat **potatoes**? (Do **not** count french fries, fried potatoes, or potato chips.)
   A. I did not eat potatoes during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

5. During the past 7 days, how many times did you eat **other vegetables**? (Do **not** count green salad, potatoes, or carrots.)
   A. I did not eat other vegetables during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

6. During the past 7 days, how many times did you drink a **can, bottle, or glass of soda or pop**, such as Coke, Pepsi, or Sprite? (Do **not** include diet soda or diet pop.)
   A. I did not drink soda or pop during the past 7 days
   B. 1 to 3 times during the past 7 days
   C. 4 to 6 times during the past 7 days
   D. 1 time per day
   E. 2 times per day
   F. 3 times per day
   G. 4 or more times per day

7. During the past 7 days, how many **glasses of milk** did you drink? (Include the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)
   A. I did not drink milk during the past 7 days
   B. 1 to 3 glasses during the past 7 days
   C. 4 to 6 glasses during the past 7 days
   D. 1 glass per day
   E. 2 glasses per day
   F. 3 glasses per day
   G. 4 or more glasses per day

8. During the past 7 days, on how many days were you physically active for a total of **at least 60 minutes per day**? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)
   A. 0 days
   B. 1 day
   C. 2 days
   D. 3 days
   E. 4 days
   F. 5 days
   G. 6 days
   H. 7 days

9. On an average school day, how many hours do you spend watching TV and/or playing video games?
   A. I do not watch TV or play video games on an average school day
   B. Less than 1 hour per day
   C. 1 hour per day
   D. 2 hours per day
   E. 3 hours per day
   F. 4 hours per day
   G. 5 or more hours per day

10. During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups.)
   A. 0 teams
   B. 1 team
   C. 2 teams
   D. 3 or more teams

11. On an average school night, how many hours of sleep do you get?
   A. 4 or less hours
   B. 5 hours
   C. 6 hours
   D. 7 hours
   E. 8 hours
   F. 9 hours
   G. 10 or more hours

APPENDIX H

TABLES AND FIGURES FOR INDIVIDUAL OUTCOME VARIABLES

Table H1

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings Based on Student BMI

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation in PE class	3.56	0.06	3.42	0.07	2.65	.01
Motivation in other classes	3.46	0.06	3.30	0.06	4.24*	.02
Success in PE class	3.82	0.06	3.72	0.06	1.31	.01
Success in other classes	3.64	0.06	3.49	0.06	3.51	.01
Willingness to spend time with student individually	3.66	0.06	3.62	0.06	0.17	.001
Likelihood of wanting student in PE class[a]	21.19	0.45	19.77	0.47	4.80*	.02
Likelihood of wanting student on sports team[a]	18.04	0.52	15.80	0.53	9.11*	.03
Self-disciplined	3.15	0.08	3.07	0.08	0.55	.002
Lazy	1.61	0.09	1.89	0.09	5.31*	.02
Self-confident	3.11	0.08	2.98	0.09	1.17	.004
Disorganized	1.63	0.09	1.86	0.09	3.44	.01
Careful	2.78	0.08	2.85	0.08	0.37	.001
Quiet	2.30	0.10	2.55	0.10	3.40	.01

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Intelligent	3.37	0.07	3.32	0.07	0.27	.001
Trustworthy	3.40	0.08	3.32	0.08	0.56	.002

Note. $N = 286$. ANOVA = analysis of variance; BMI = body mass index.

[a]Data were transformed by squaring the original scores.

*$p < .05$.

Table H2

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings Based on Student Gender

Variable	Male		Female		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation in PE class	3.51	0.07	3.47	0.06	0.20	.001
Motivation in other classes	3.39	0.06	3.37	0.05	0.02	< .001
Success in PE class	3.80	0.06	3.75	0.06	0.34	.001
Success in other classes	3.57	0.06	3.56	0.05	0.02	< .001
Willingness to spend time with student individually	3.70	0.07	3.58	0.06	1.64	.01
Likelihood of wanting student in PE class[a]	20.72	0.48	20.24	0.44	0.56	.002
Likelihood of wanting student on sports team[a]	17.23	0.55	16.61	0.50	0.71	.003
Self-disciplined	3.14	0.08	3.08	0.08	0.24	.001
Lazy	1.73	0.09	1.76	0.08	0.07	< .001
Self-confident	3.10	0.09	3.00	0.08	0.68	.002
Disorganized	1.80	0.09	1.69	0.09	0.68	.002
Careful	2.85	0.09	2.78	0.08	0.37	.001
Quiet	2.38	0.10	2.48	0.09	0.54	.002
Intelligent	3.34	0.07	3.35	0.07	0.03	< .001
Trustworthy	3.25	0.08	3.47	0.08	3.94*	.01

Note. $N = 286$. ANOVA = analysis of variance.

[a]Data were transformed by squaring the original scores.

*$p < .05$.

Table H3

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings Based on Student Health and Fitness Profiles

Variable	Healthy Profile		Unhealthy Profile		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation in PE class	4.09	0.06	2.89	0.07	175.43**	.39
Motivation in other classes	3.82	0.06	2.95	0.06	118.23**	.30
Success in PE class	4.29	0.06	3.25	0.06	146.22**	.35
Success in other classes	3.93	0.06	3.19	0.06	85.66**	.24
Willingness to spend time with student individually	3.70	0.06	3.57	0.07	2.12	.01
Likelihood of wanting student in PE class[a]	21.98	0.45	18.99	0.47	21.20**	.07
Likelihood of wanting student on sports team[a]	20.06	0.51	13.78	0.54	71.75**	.21
Self-disciplined	3.79	0.08	2.43	0.08	146.19**	.35
Lazy	1.10	0.08	2.39	0.09	113.02**	.29
Self-confident	3.62	0.08	2.48	0.09	89.91**	.24
Disorganized	1.37	0.09	2.12	0.09	34.23**	.11
Careful	3.03	0.08	2.60	0.09	16.55**	.05
Quiet	2.15	0.10	2.70	0.10	15.76**	.05
Intelligent	3.62	0.07	3.07	0.07	31.13**	.10
Trustworthy	3.55	0.08	3.17	0.08	11.25**	.04

Note. $N = 286$. ANOVA = analysis of variance.

[a]Data were transformed by squaring the original scores.

**$p < .01$.

Table H4

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings for Student BMI x Student Gender Interaction

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation in PE class					1.37	.01
Male	3.64_{a}	0.10	3.38_{a}	0.09		
Female	3.49_{a}	0.08	3.45_{a}	0.09		
Motivation in other classes					3.73	.01
Male	3.55_{a}	0.09	3.23_{b}	0.08		
Female	$3.38_{a, b}$	0.07	$3.37_{a, b}$	0.08		
Success in PE class					1.72	.01
Male	3.90_{a}	0.09	3.69_{a}	0.09		
Female	3.74_{a}	0.08	3.76_{a}	0.09		
Success in other classes					1.33	.01
Male	3.69_{a}	0.09	3.45_{b}	0.08		
Female	$3.59_{a, b}$	0.07	$3.53_{a, b}$	0.08		
Willingness to spend time with student individually					0.08	< .001
Male	3.73_{a}	0.10	3.66_{a}	0.09		
Female	3.59_{a}	0.08	3.57_{a}	0.09		
Likelihood of wanting student in PE class[a]					0.24	< .001
Male	21.59_{a}	0.69	19.85_{a}	0.66		
Female	20.79_{a}	0.59	19.68_{a}	0.65		
Likelihood of wanting student on sports team[a]					0.003	< .001
Male	18.37_{a}	0.79	16.10_{b}	0.76		
Female	$17.71_{a, b, c}$	0.67	$15.51_{a, b, d}$	0.75		

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Self-disciplined					0.09	< .001
Male	3.20_a	0.12	3.08_a	0.12		
Female	3.11_a	0.10	3.06_a	0.11		
Lazy					1.17	.004
Male	1.52_a	0.13	1.94_b	0.12		
Female	$3.11_{a, b}$	0.10	$3.06_{a, b}$	0.11		
Self-confident					0.05	< .001
Male	3.17_a	0.13	3.02_a	0.12		
Female	3.05_a	0.11	2.94_a	0.12		
Disorganized					3.34	.01
Male	1.56_a	0.14	2.03_b	0.13		
Female	$1.69_{a, b}$	0.11	$1.69_{a, b}$	0.13		
Careful					0.35	.001
Male	2.78_a	0.13	2.92_a	0.12		
Female	2.78_a	0.11	2.78_a	0.12		
Quiet					2.66	.01
Male	2.14_a	0.15	2.62_b	0.14		
Female	$2.46_{a, b}$	0.13	$2.49_{a, b}$	0.14		
Intelligent					0.83	.003
Male	3.41_a	0.10	3.27_a	0.10		
Female	3.33_a	0.09	3.37_a	0.10		
Trustworthy					0.34	.001
Male	3.32_a	0.12	3.17_a	0.11		
Female	3.48_a	0.10	3.46_a	0.11		

Note. $N = 286$. Means with different subscripts differ at the $p = .05$ level by Bonferroni's post-hoc comparisons.

ANOVA = analysis of variance; BMI = body mass index.

[a]Data were transformed by squaring the original scores.

Table H5

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings for Student BMI x Student Health and Fitness Profile Interaction

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation in PE class					0.82	.003
Healthy	4.20_a	0.08	3.97_a	0.09		
Unhealthy	2.92_b	0.10	2.86_b	0.09		
Motivation in other classes					6.14*	.02
Healthy	4.00_a	0.07	3.63_b	0.08		
Unhealthy	2.93_c	0.08	$2.96_{a, c, d}$	0.08		
Success in PE class					1.80	.01
Healthy	4.40_a	0.08	4.19_a	0.09		
Unhealthy	3.24_b	0.09	3.26_b	0.09		
Success in other classes					2.25	.01
Healthy	4.07_a	0.07	3.80_b	0.08		
Unhealthy	$3.21_{b, c}$	0.09	$3.18_{a, c, d}$	0.08		
Willingness to spend time with student individually					0.001	< .001
Healthy	3.72_a	0.08	3.68_a	0.09		
Unhealthy	3.59_a	0.10	3.56_a	0.09		
Likelihood of wanting student in PE class[a]					0.11	< .001
Healthy	22.58_a	0.59	21.37_a	0.66		
Unhealthy	19.81_b	0.69	18.17_b	0.65		
Likelihood of wanting student on sports team[a]					0.03	< .001
Healthy	21.25_a	0.68	18.88_b	0.76		
Unhealthy	$14.83_{b, c}$	0.78	$12.73_{c, d}$	0.75		

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Self-disciplined					1.79	.01
Healthy	3.91_a	0.10	3.67_a	0.12		
Unhealthy	2.39_b	0.12	2.46_b	0.11		
Lazy					3.04	.01
Healthy	0.85_a	0.11	1.35_b	0.12		
Unhealthy	2.36_c	0.13	$2.43_{c, d}$	0.12		
Self-confident					1.57	.01
Healthy	3.76_a	0.11	3.48_a	0.12		
Unhealthy	2.47_b	0.13	2.49_b	0.12		
Disorganized					2.02	.01
Healthy	1.17_a	0.12	1.58_b	0.13		
Unhealthy	$2.09_{b, c}$	0.13	$2.14_{c, d}$	0.13		
Careful					0.35	.001
Healthy	2.98_a	0.11	3.08_a	0.12		
Unhealthy	2.58_b	0.12	2.62_b	0.12		
Quiet					0.78	.003
Healthy	1.96_a	0.13	2.34_b	0.14		
Unhealthy	$2.63_{b, c}$	0.15	2.77_c	0.14		
Intelligent					0.07	< .001
Healthy	3.66_a	0.09	3.58_a	0.10		
Unhealthy	3.08_b	0.10	3.06_b	0.10		
Trustworthy					0.001	< .001
Healthy	3.59_a	0.10	3.50_a	0.11		
Unhealthy	3.21_b	0.12	3.13_b	0.11		

Note. $N = 286$. Means with different subscripts differ at the $p = .05$ level by Bonferroni's post-hoc comparisons.

ANOVA = analysis of variance; BMI = body mass index.

[a]Data were transformed by squaring the original scores.

*$p < .05$.

Table H6

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings for Student Gender x Student Health and Fitness Profile Interaction

Variable	Healthy Profile		Unhealthy Profile		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation in PE class					1.53	.01
Male	4.17_a	0.10	2.85_b	0.09		
Female	4.01_a	0.08	2.92_b	0.09		
Motivation in other classes					0.25	.001
Male	3.80_a	0.09	2.97_b	0.08		
Female	3.83_a	0.07	2.92_b	0.08		
Success in PE class					2.61	.01
Male	4.39_a	0.09	3.21_b	0.09		
Female	4.20_a	0.08	3.30_b	0.09		
Success in other classes					0.03	<.001
Male	3.95_a	0.08	3.19_b	0.08		
Female	3.92_a	0.07	3.19_b	0.08		
Willingness to spend time with student individually					0.31	.001
Male	3.74_a	0.09	3.66_a	0.09		
Female	3.67_a	0.08	3.49_a	0.09		
Likelihood of wanting student in PE class[a]					1.46	.01
Male	22.61_a	0.68	18.84_b	0.67		
Female	21.34_a	0.57	19.14_b	0.66		
Likelihood of wanting student on sports team[a]					1.25	.004
Male	20.79_a	0.78	13.68_b	0.77		
Female	19.34_a	0.66	13.88_b	0.76		

Variable	Healthy Profile		Unhealthy Profile		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Self-disciplined					0.71	.003
Male	3.87_a	0.12	2.41_b	0.12		
Female	3.72_a	0.10	2.45_b	0.12		
Lazy					2.66	.01
Male	0.98_a	0.13	2.48_b	0.13		
Female	1.21_a	0.11	2.31_b	0.12		
Self-confident					0.66	.002
Male	3.71_a	0.13	2.48_b	0.13		
Female	3.52_a	0.11	2.48_b	0.12		
Disorganized					1.42	.01
Male	1.50_a	0.13	2.09_b	0.13		
Female	1.25_a	0.11	2.14_b	0.13		
Careful					1.69	.01
Male	3.14_a	0.12	2.56_b	0.12		
Female	2.92_a	0.10	2.64_a	0.12		
Quiet					0.82	.003
Male	2.04_a	0.14	2.71_b	0.14		
Female	2.27_a	0.12	2.69_b	0.14		
Intelligent					0.42	.002
Male	3.64_a	0.10	3.03_a	0.10		
Female	3.59_a	0.09	3.11_a	0.10		
Trustworthy					2.79	.01
Male	3.53_a	0.12	2.97_b	0.12		
Female	3.57_a	0.10	$3.38_{a, c}$	0.11		

Note. $N = 286$. Means with different subscripts differ at the $p = .05$ level by Bonferroni's post-hoc comparisons.

ANOVA = analysis of variance; BMI = body mass index.

[a]Data were transformed by squaring the original score

Table H7

Hierarchical Moderated Regression Results for Student BMI and Teacher Mindset

Variable	Student BMI	Teacher GM	Teacher FM	R^2	Student BMI x Teacher GM	Student BMI x Teacher FM	GM x FM	Student BMI x GM x FM	ΔR^2
	$B(SE)$	$B(SE)$	$B(SE)$		$B(SE)$	$B(SE)$	$B(SE)$	$B(SE)$	
Motivation in PE class	-0.11(0.06)*	0.01(0.01)	-0.17(0.10)	.03	-0.01(0.01)	0.15(0.11)	-0.01(0.02)	0.04(0.02)	.02
Motivation in other classes	-0.12(0.05)*	0.01(0.01)	-0.17(0.09)	.04	-0.01(0.01)	0.18(0.09)*	-0.03(0.02)	0.01(0.02)	.03
Success in PE class	-0.08(0.05)	0.02(0.01)	-0.26(0.10)**	.05	-0.002(0.01)	0.04(0.10)	-0.02(0.02)	0.03(0.02)	.01
Success in other classes	-0.10(0.04)*	0.02(0.01)*	-0.16(0.08)*	.05	-0.01(0.01)	0.14(0.09)	-0.02(0.02)	0.01(0.02)	.02
Willingness to spend time with student individually	-0.01(0.04)	0.03(0.01)*	-0.08(0.08)	.04	0.004(0.01)	0.14(0.09)	-0.02(0.02)	-0.02(0.02)	.02
Likelihood of wanting student in PE class[a]	-0.78(0.33)*	0.08(0.07)	-0.47(0.61)	.03	-0.02(0.07)	0.19(0.65)	-0.18(0.14)	0.15(0.14)	.01
Likelihood of wanting student on sports team[a]	-1.32(0.40)*	0.08(0.09)	-1.59(0.75)*	.06	-0.03(0.09)	0.80(0.79)	-0.25(0.17)	0.11(0.17)	.02
Self-disciplined	-0.10(0.07)	0.01(0.02)	-0.15(0.13)	.01	-0.002(0.02)	0.18(0.13)	-0.03(0.03)	0.02(0.03)	.01
Lazy	0.19(0.07)**	-0.02(0.02)	0.16(0.13)	.04	0.01(0.02)	-0.03(0.14)	0.05(0.03)	-0.03(0.03)	.02
Self-confident	-0.10(0.07)	0.01(0.02)	-0.12(0.13)	.01	0.01(0.02)	0.07(0.13)	-0.04(0.03)	0.03(0.03)	.01
Disorganized	0.14(0.07)*	-0.003(0.02)	0.20(0.13)	.03	0.003(0.02)	-0.01(0.13)	-0.02(0.03)	-0.02(0.03)	.003
Careful	0.03(0.06)	0.01(0.01)	0.12(0.11)	.01	-0.01(0.01)	-0.19(0.12)	-0.05(0.03)	0.04(0.03)	.02
Quiet	0.14(0.07)*	0.02(0.02)	0.14(0.13)	.02	-0.01(0.02)	0.06(0.14)	0.04(0.03)	-0.04(0.03)	.01
Intelligent	-0.04(0.05)	0.02(0.01)	-0.03(0.09)	.01	-0.02(0.01)	0.04(0.10)	0.01(0.02)	0.02(0.02)	.01
Trustworthy	-0.05(0.06)	0.03(0.01)*	-0.06(0.10)	.02	-0.01(0.01)	0.01(0.11)	0.01(0.02)	0.004(0.02)	.002

Note. N = 286. BMI = body mass index; GM = growth mindset; FM = fixed mindset.

*p < .05. **p < .01.

Table H8

Hierarchical Moderated Regression Results for Student BMI and Teacher Personality

Variable	Student BMI	Agreeableness	Openness	R^2	Student BMI x Agreeableness	Student BMI x Openness	Agreeableness x Openness	Student BMI x Agreeableness x Openness	ΔR^2
	$B(SE)$	$B(SE)$	$B(SE)$		$B(SE)$	$B(SE)$	$B(SE)$	$B(SE)$	
Motivation in PE class	-0.12(0.06)*	-0.03(0.10)	0.12(0.09)	.02	-0.04(0.10)	0.09(0.10)	0.12(0.13)	0.03(0.13)	.01
Motivation in other classes	-0.13(0.05)**	-0.07(0.08)	0.11(0.08)	.03	-0.06(0.08)	0.07(0.08)	0.06(0.11)	-0.04(0.11)	.01
Success in PE class	-0.09(0.05)	0.05(0.09)	0.12(0.09)	.02	-0.05(0.09)	0.10(0.09)	0.14(0.12)	-0.05(0.12)	.01
Success in other classes	-0.11(0.05)*	0.07(0.08)	0.08(0.08)	.03	-0.02(0.08)	0.04(0.08)	0.002(0.10)	0.01(0.10)	.001
Willingness to spend time with student individually	-0.01(0.04)	0.31(0.07)***	-0.002(0.07)	.07	0.04(0.08)	0.01(0.07)	-0.07(0.10)	-0.16(0.10)	.01
Likelihood of wanting student in PE class[a]	-0.80(0.32)*	0.51(0.57)	1.10(0.54)*	.05	0.76(0.57)	0.45(0.55)	-0.27(0.73)	-0.55(0.73)	.02
Likelihood of wanting student on sports team[a]	-1.38(0.40)**	0.25(0.70)	1.48(0.67)*	.06	-0.29(0.70)	1.02(0.68)	-0.05(0.90)	-1.29(0.90)	.02
Self-disciplined	-0.11(0.07)	0.02(0.12)	0.16(0.11)	.02	-0.12(0.12)	0.18(0.11)	-0.15(0.15)	0.12(0.15)	.02
Lazy	0.20(0.07)**	0.11(0.12)	-0.14(0.12)	.03	0.07(0.12)	-0.08(0.12)	-0.19(0.16)	-0.08(0.16)	.01
Self-confident	-0.11(0.07)	0.02(0.12)	0.09(0.11)	.01	-0.06(0.12)	0.13(0.12)	-0.09(0.15)	0.04(0.15)	.01
Disorganized	0.14(0.07)*	-0.12(0.12)	0.12(0.11)	.02	0.06(0.12)	-0.13(0.11)	-0.06(0.15)	0.13(0.15)	.01
Careful	0.03(0.06)	-0.06(0.10)	0.11(0.10)	.01	0.01(0.10)	0.13(0.10)	-0.07(0.13)	0.13(0.13)	.01
Quiet	0.14(0.07)*	0.18(0.12)	-0.12(0.12)	.02	-0.06(0.12)	-0.13(0.12)	0.08(0.16)	-0.17(0.16)	.01
Intelligent	-0.05(0.05)	0.07(0.09)	0.19(0.08)*	.03	-0.10(0.09)	0.16(0.08)	-0.02(0.11)	0.04(0.11)	.01
Trustworthy	-0.06(0.06)	0.08(0.10)	0.05(0.09)	.01	-0.09(0.10)	0.23(0.09)*	0.01(0.13)	-0.12(0.13)	.03

Note. N = 286. BMI = body mass index.

*p < .05. **p < .01. ***p < .001.

Table H9

Hierarchical Moderated Regression Results for Student BMI, Teacher BMI, and Teacher Tenure

Variable	Student BMI	Tenure	Teacher BMI	R^2	Student BMI x Tenure	Student BMI x Teacher BMI	Teacher BMI x Tenure	Student BMI x Teacher BMI x Tenure	ΔR^2
	$B(SE)$	$B(SE)$	$B(SE)$		$B(SE)$	$B(SE)$	$B(SE)$	$B(SE)$	
Motivation in PE class	-0.15(0.06)**	0.01(0.01)	0.02(0.01)	.03	0.01(0.01)	0.01(0.01)	-0.001(0.001)	-0.002(0.001)	.02
Motivation in other classes	-0.15(0.05)**	0.01(0.01)	0.01(0.01)	.05	0.01(0.01)	0.01(0.01)	< 0.001(0.001)	-0.002(0.001)	.02
Success in PE class	-0.11(0.05)	0.004(0.01)	0.02(0.01)	.02	0.002(0.01)	0.01(0.01)	< 0.001(0.001)	-0.003(0.001)	.03
Success in other classes	-0.12(0.05)**	0.003(0.01)	0.02(0.01)	.04	0.01(0.01)	0.01(0.01)	-0.001(0.001)	-0.001(0.001)	.02
Willingness to spend time with student individually	-0.03(0.05)	0.01(0.01)	-0.01(0.01)	.01	-0.001(0.01)	-0.01(0.01)	-0.001(0.001)	< 0.001(0.001)	.02
Likelihood of wanting student in PE class[a]	-0.98(0.34)**	0.07(0.04)*	0.06(0.07)	.04	0.01(0.04)	0.01(0.07)	-0.01(0.01)	-0.01(0.01)	.01
Likelihood of wanting student on sports team[a]	-1.51(0.42)***	0.05(0.04)	0.08(0.08)	.05	0.002(0.04)	0.12(0.08)	< 0.001(0.01)	-0.01(0.01)	.02
Self-disciplined	-0.12(0.07)	0.01(0.01)	0.02(0.01)	.02	0.004(0.01)	0.01(0.01)	-0.001(0.001)	-0.002(0.001)	.02
Lazy	0.23(0.07)**	-0.01(0.01)	-0.02(0.01)	.05	< 0.001(0.01)	-0.02(0.01)	-0.001(0.001)	0.003(0.001)	.02
Self-confident	-0.14(0.07)*	0.01(0.01)	0.02(0.01)	.03	0.001(0.01)	0.02(0.01)	< 0.001(0.001)	-0.003(0.001)*	.02
Disorganized	0.18(0.07)*	-0.02(0.01)*	-0.01(0.01)	.04	-0.01(0.01)	-0.01(0.01)	-0.001(0.001)	0.001(0.001)	.01
Careful	0.03(0.06)	0.01(0.01)	0.01(0.01)	.01	-0.001(0.01)	-0.01(0.01)	< 0.001(0.001)	-0.001(0.001)	.01
Quiet	0.15(0.07)*	0.002(0.01)	-0.02(0.01)	.02	-0.01(0.01)	0.01(0.01)	0.001(0.001)	0.004(0.001)**	.04
Intelligent	-0.07(0.05)	0.01(0.01)	0.02(0.01)	.02	0.003(0.01)	0.001(0.01)	< 0.001(0.001)	-0.001(0.001)	.01
Trustworthy	-0.10(0.06)	0.01(0.01)	0.01(0.01)	.02	0.01(0.01)	0.001(0.01)	0.001(0.001)	-0.002(0.001)	.02

BMI = body mass index.

*p < .05. **p < .01. ***p < .001

APPENDIX I

TABLES AND FIGURES FOR MAIN ANALYSES

Table 1

Participant Demographics

Variable	Frequency	Percent		
Gender				
Male	105	36.7		
Female	181	63.3		
Assigned sex at birth				
Male	102	35.7		
Female	181	63.3		
Other/Intersex	3	1.0		
	N	*M*	*SD*	Range
Age	285	44.19	10.80	23-80
Height (in.)	284	66.80	3.92	58-78
Weight (lb.)	272	175.28	41.02	103-369
BMI	271	27.38	5.28	17.0-50.1

Note. $N = 286$. BMI = body mass index; in. = inches; lb. = pounds.

Table 2

Participant Racial Characteristics - General Categories

Variable	Frequency	Percent
Racial Background		
White/Anglo-American	234	81.8
Black/African-American	21	7.3
Asian	2	0.7
Native American	2	0.7
Other/Multiracial	20	7.0
Decline to Answer	7	2.4

Note. $N = 286$.

Table 3

Participant Racial Characteristics - Subcategories

Variable	Frequency	Percent
Hispanic/Latino		
Mexican, Mexican-American, Chicano	40	14.0
Other Hispanic/Latino	11	3.8
Not Hispanic/Latino	228	79.7
Decline to Answer	4	1.4
Missing	3	1.0
Asian		
Chinese	1	0.3
Filipino	2	0.7
Japanese	2	0.7
Other	11	3.8
Decline to Answer	40	14.0
Missing	230	80.4

Note. $N = 286$.

Table 4

Participant Job-Related Information

Variable	Frequency	Percent
State		
Texas	238	83.2
Oklahoma	15	5.2
Louisiana	2	0.7
Arkansas	18	6.3
New Mexico	2	0.7
Other[a]	11	3.8
School Type		
Urban	99	34.7
Rural	38	13.3
Suburban	140	49.0
Other	8	2.8
Missing	1	0.3
Coach		
Yes	112	39.2
No	174	60.8

Variable	*N*	*M*	*SD*	Range
Tenure (years)	286	15.15	9.53	0-44
Number of Students in One PE Class	282	47.54	16.16	19-75

Note. $N = 286$.

[a]Other states listed included Tennessee, Virginia, and Illinois.

Table 5

Participant Personality Characteristics and Sport-Related Mindset

Variable	*N*	*M*	*SD*	Range	Cronbach's α
Big Five traits					
Openness	286	3.64	0.64	1.83-5.00	.65
Agreeableness	286	4.13	0.62	2.33-5.00	.75
Conscientiousness	286	4.14	0.60	1.83-5.00	.67
Extraversion	286	3.89	0.64	2.00-5.00	.69
Neuroticism	286	2.06	0.71	1.00-4.50	.77
Mindset					
Growth mindset[a]	286	17.85	4.49	1.00-25.00	.74
Fixed mindset	286	2.18	0.54	1.00-3.83	.67

[a]Data were transformed by squaring the original values.

Table 6

Descriptive Statistics for Teachers' Motivation-Related Ratings of Students

Variable	*N*	*M*	*SD*	Range
Motivation in PE class	286	3.54	0.95	1-5
Motivation in other classes	286	3.43	0.80	1-5
Success in PE class	286	3.82	0.87	2-5
Success in other classes	286	3.60	0.76	2-5
Willingness to spend time with student individually	286	3.64	0.74	2-5
Likelihood of wanting student in PE class[a]	286	20.62	5.56	4-25
Likelihood of wanting student on sports team[a]	286	17.25	6.91	1-25

[a]Data were transformed by squaring the original values.

Table 7

Descriptive Statistics for Teachers' Ratings of Individual Student Characteristics

Variable	*N*	*M*	*SD*	Range
Self-disciplined	286	3.17	1.14	0-5
Lazy	286	1.68	1.20	0-5
Self-confident	286	3.09	1.14	0-5
Disorganized	286	1.71	1.13	0-5
Careful	286	2.81	0.99	0-5
Quiet	286	2.41	1.17	0-5
Intelligent	286	3.37	0.84	0-5
Trustworthy	286	3.38	0.94	1-5

Table 8

Results from a Factor Analysis of Teachers' Motivation-Related Ratings of Students

Rating item	Factor loading	
	1	2
Factor 1: Motivation/Success		
Motivation in other classes	**.90**	.07
Motivation in PE class	**.89**	.16
Success in other classes	**.86**	.21
Success in PE class	**.85**	.28
Factor 2: Spend Time		
Likely to want on team	**.65**	**.52**
Willingness to spend time	.001	**.83**
Likely to want in PE class	.43	**.68**

Note. N = 286. The extraction method was principal component analysis with a varimax rotation. Factor loadings above .50 are in bold.

Table 9

Results from a Factor Analysis of Teachers' Ratings of Individual Student Characteristics

Rating item	Factor loading	
	1	2
Factor 1: Trustworthy/Intelligent		
Intelligent	**.83**	-.15
Trustworthy	**.82**	-.08
Careful	**.77**	.09
Self-confident	**.75**	-.43
Self-disciplined	**.71**	**-.54**
Factor 2: Lazy		
Quiet	.14	**.77**
Lazy	-.34	**.76**
Disorganized	-.16	**.72**

Note. N = 286. The extraction method was principal component analysis with a varimax rotation. Factor loadings above .50 are in bold.

Table 10

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings Based on Student BMI

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation/Success	0.03	0.07	-0.16	0.07	4.15*	.02
Spend Time	0.08	0.09	-0.08	0.09	1.76	.01
Trustworthy/Intelligent	-0.03	0.08	-0.02	0.08	0.001	< .001
Lazy	-0.09	0.07	0.19	0.08	6.94**	.02

Note. $N = 286$. ANOVA = analysis of variance; BMI = body mass index.

*$p < .05$. **$p < .01$.

Table 11

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings Based on Student Gender

Variable	Male		Female		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation/Success	-0.06	0.07	-0.06	0.06	< 0.001	< .001
Spend Time	0.08	0.09	-0.08	0.08	1.88	.01
Trustworthy/Intelligent	-0.05	0.09	-0.01	0.08	0.11	< .001
Lazy	0.02	0.08	0.07	0.07	0.17	.001

Note. $N = 286$. ANOVA = analysis of variance. None of the above F statistics were significant at the $p = 0.05$ level.

Table 12

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings Based on Student Health and Fitness Profiles

Variable	Healthy		Unhealthy		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation/Success	0.56	0.07	-0.69	0.07	176.43***	.39
Spend Time	0.08	0.08	-0.08	0.09	1.53	.01
Trustworthy/Intelligent	0.32	0.08	-0.37	0.08	35.90***	.11
Lazy	-0.43	0.07	0.52	0.08	79.59***	.22

Note. $N = 286$. ANOVA = analysis of variance.

***$p < .001$.

Table 13

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings for Student BMI x Student Gender Interaction

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation/Success					2.35	.01
Male	0.11_a	0.10	-0.23_b	0.10		
Female	$0.04_{a, b}$	0.09	$-0.09_{a, b}$	0.10		
Spend Time					0.01	< .001
Male	0.16_a	0.13	0.01_a	0.12		
Female	0.002_a	0.11	-0.17_a	0.12		
Trustworthy/Intelligent					0.02	< .001
Male	-0.06_a	0.12	-0.04_a	0.12		
Female	-0.002_a	0.10	-0.01_a	0.12		
Lazy					3.75	.01
Male	-0.22_a	0.11	0.27_b	0.11		
Female	0.03_a	0.10	$0.11_{a, b}$	0.11		

Note. $N = 286$. Means with different subscripts differ at the $p = .05$ level by Bonferroni's post-hoc comparisons. ANOVA = analysis of variance; BMI = body mass index.

Table 14

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings for Student BMI x Student Health and Fitness Profile Interaction

Variable	Average BMI		Obese BMI		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation/Success					3.41	.01
Healthy	0.75_a	0.09	0.38_b	0.10		
Unhealthy	-0.68_c	0.10	-0.70_c	0.10		
Spend Time					0.75	.003
Healthy	0.10_a	0.11	0.05_a	0.12		
Unhealthy	0.06_a	0.13	-0.21_a	0.12		
Trustworthy/Intelligent					0.02	< .001
Healthy	0.33_a	0.11	0.31_a	0.12		
Unhealthy	-0.38_b	0.12	-0.36_b	0.12		
Lazy					3.75	.01
Healthy	-0.67_a	0.10	-0.18_b	0.11		
Unhealthy	$0.48_{b, c}$	0.11	$0.55_{c, d}$	0.11		

Note. $N = 286$. Means with different subscripts differ at the $p = .05$ level by Bonferroni's post-hoc comparisons. ANOVA = analysis of variance; BMI = body mass index.

Table 15

Means, Standard Errors, and ANOVA Statistics for Teacher Ratings for Student Gender x Student Health and Fitness Profile Interaction

Variable	Healthy Profile		Unhealthy Profile		$F(1, 278)$	η_p^2
	M	*SE*	*M*	*SE*		
Motivation/Success					0.75	.003
Male	0.60_a	0.10	-0.73_b	0.10		
Female	0.52_a	0.08	-0.65_b	0.10		
Spend Time					0.07	< .001
Male	0.17_a	0.13	-0.01_a	0.13		
Female	-0.03_a	0.11	-0.14_a	0.12		
Trustworthy/Intelligent					1.61	.01
Male	0.37_a	0.12	-0.47_b	0.12		
Female	0.27_a	0.10	-0.28_b	0.12		
Lazy					0.04	< .001
Male	-0.46_a	0.11	0.51_b	0.11		
Female	-0.39_a	0.09	0.53_b	0.11		

Note. $N = 286$. Means with different subscripts differ at the $p = .05$ level by Bonferroni's post-hoc comparisons. ANOVA = analysis of variance.

Table 16

Hierarchical Moderated Regression Results for Student BMI and Teacher Mindset

Variable	Student BMI	Teacher GM	Teacher FM	R^2	Student BMI x Teacher GM	Student BMI x Teacher FM	GM x FM	Student BMI x GM x FM	ΔR^2
	$B(SE)$	$B(SE)$	$B(SE)$		$B(SE)$	$B(SE)$	$B(SE)$	$B(SE)$	
Motivation/Success	-0.14(0.06)*	0.01(0.01)	-0.24(0.11)*	.04	-0.01(0.01)	0.14(0.12)	-0.02(0.03)	0.04(0.03)	.02
Spend Time	-0.07(0.06)	0.03(0.01)*	-0.08(0.11)	.03	0.01(0.01)	0.11(0.12)	-0.03(0.03)	-0.01(0.03)	.01
Trustworthy/Intelligent	-0.02(0.06)	0.02(0.01)	0.01(0.11)	.01	-0.01(0.01)	0.01(0.12)	-0.02(0.03)	0.02(0.03)	.01
Lazy	0.17(0.06)**	0.01(0.01)	0.21(0.11)	.04	-0.002(0.01)	-0.06(0.12)	0.02(0.03)	-0.02(0.03)	.01

Note. N = 286. BMI = body mass index; GM = growth mindset; FM = fixed mindset.

*p < .05. **p < .01.

Table 17

Hierarchical Moderated Regression Results for Student BMI and Teacher Personality

Variable	Student BMI	Agreeableness	Openness	R^2	Student BMI x Agreeableness	Student BMI x Openness	Agreeableness x Openness	Student BMI x Agreeabless x Openness	ΔR^2
	$B(SE)$	$B(SE)$	$B(SE)$		$B(SE)$	$B(SE)$	$B(SE)$	$B(SE)$	
Motivation/Success	-0.16(0.06)**	-0.10(0.10)	0.15(0.10)	.03	-0.08(0.10)	0.10(0.10)	0.12(0.13)	0.03(0.13)	.01
Spend Time	-0.07(0.06)	0.36(0.10)***	0.10(0.10)	.07	0.11(0.10)	0.06(0.10)	-0.12(0.13)	-0.25(0.13)	.02
Trustworthy/Intelligent	-0.03(0.06)	0.05(0.10)	0.14(0.10)	.01	-0.09(0.10)	0.19(0.10)	-0.06(0.14)	0.02(0.14)	.01
Lazy	0.18(0.06)**	0.06(0.10)	-0.04(0.10)	.03	0.02(0.10)	-0.09(0.10)	-0.03(0.13)	-0.05(0.13)	.003

Note. N = 286. BMI = body mass index.

**p < .01. ***p < .001.

Note. N = 286. BMI = body mass index.

*p < .05. **p < .01.

Note. N = 286. BMI = body mass index.

*p < .05. **p < .01.

Table 18

Hierarchical Moderated Regression Results for Student BMI, Teacher BMI, and Teacher Tenure

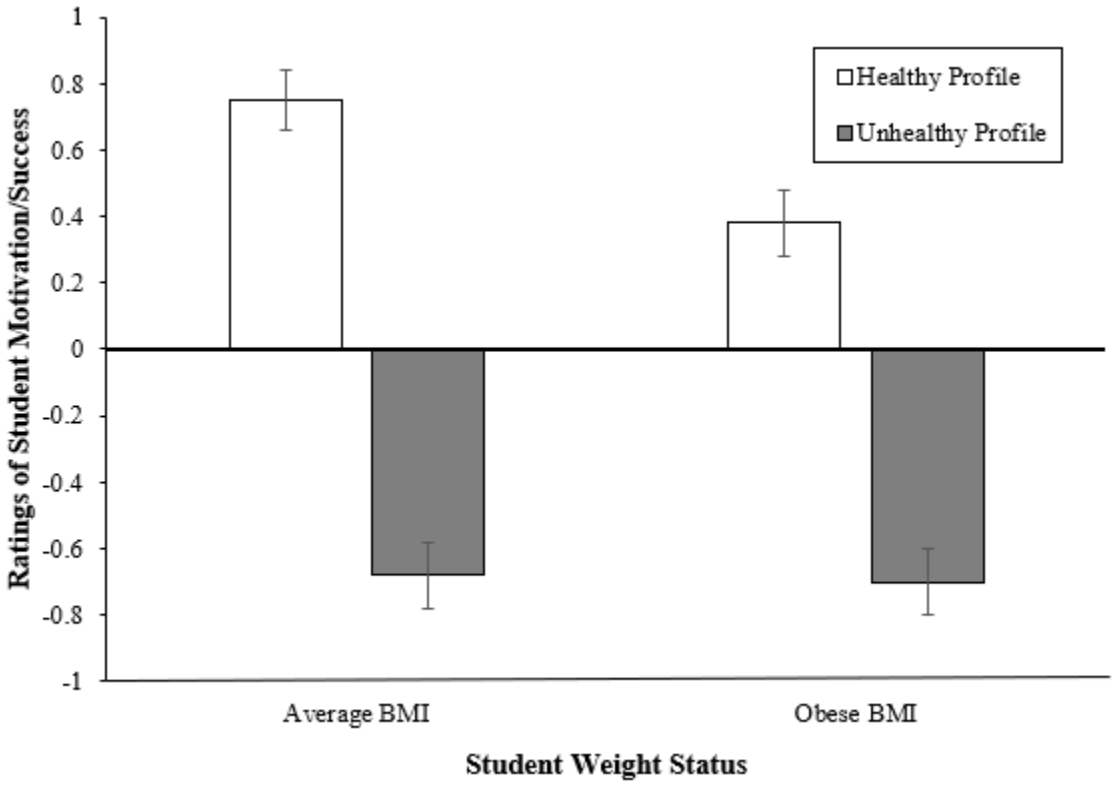
Variable	Student BMI	Teacher BMI	Tenure	R^2	Student BMI x Teacher BMI	Student BMI x Tenure	Teacher BMI x Tenure	Student BMI x Teacher BMI x Tenure	ΔR^2
	$B(SE)$	$B(SE)$	$B(SE)$		$B(SE)$	$B(SE)$	$B(SE)$	$B(SE)$	
Motivation/Success	-0.18(0.06)**	0.03(0.01)*	0.01(0.01)	.04	0.01(0.01)	0.01(0.01)	< 0.001(0.001)	-0.002(0.001)	.03
Spend Time	-0.10(0.06)	-0.01(0.01)	0.01(0.01)	.02	-0.01(0.01)	-0.002(0.01)	-0.002(0.001)	-0.001(0.001)	.01
Trustworthy/Intelligent	-0.05(0.06)	0.01(0.01)	0.01(0.01)	.02	0.004(0.01)	0.002(0.01)	< 0.001(0.001)	-0.001(0.001)	.01
Lazy	0.20(0.06)**	-0.02(0.01)	-0.01(0.01)	.05	-0.01(0.01)	-0.004(0.01)	< 0.001(0.001)	0.003(0.001)*	.03

Note. N = 286. BMI = body mass index.

*p < .05. **p < .01.

Figure 1

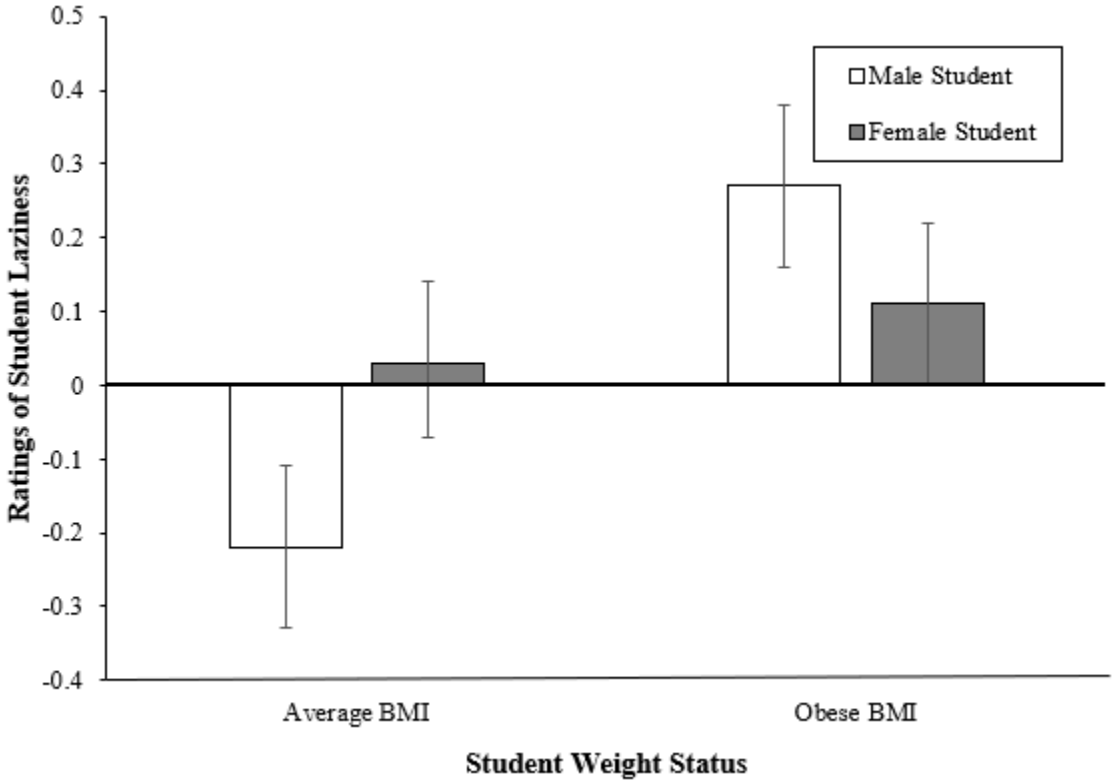
Motivation/Success Rating Scores for Student BMI x Student Health/Fitness Profile Interaction



Note. N = 286. The above graph shows motivation/success scores based on student BMI and student health/fitness profiles. The overall interaction was not significant. Within those with unhealthy profiles, there was not a significant difference in ratings of student motivation/success between average weight and obese students. However, obese students with healthy profiles were rated as significantly less motivated/successful compared to average weight students with healthy profiles. Error bars show standard errors.

Figure 2

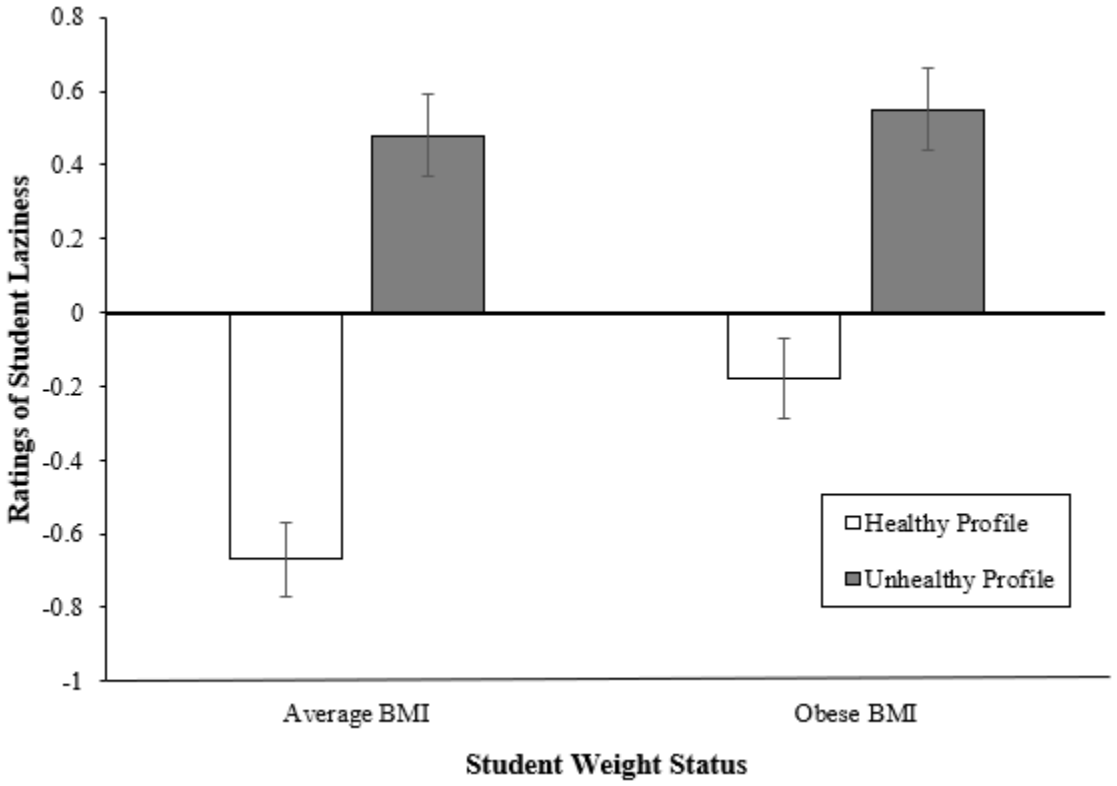
Laziness Rating Scores for Student BMI x Student Gender Interaction



Note. $N = 286$. The above graph shows laziness scores based on student BMI and student gender. The overall interaction was significant. PE teachers rated obese boys as lazier than average weight boys. There was no significant difference in teachers' ratings of laziness for obese girls compared to average weight girls. Error bars show standard errors.

Figure 3

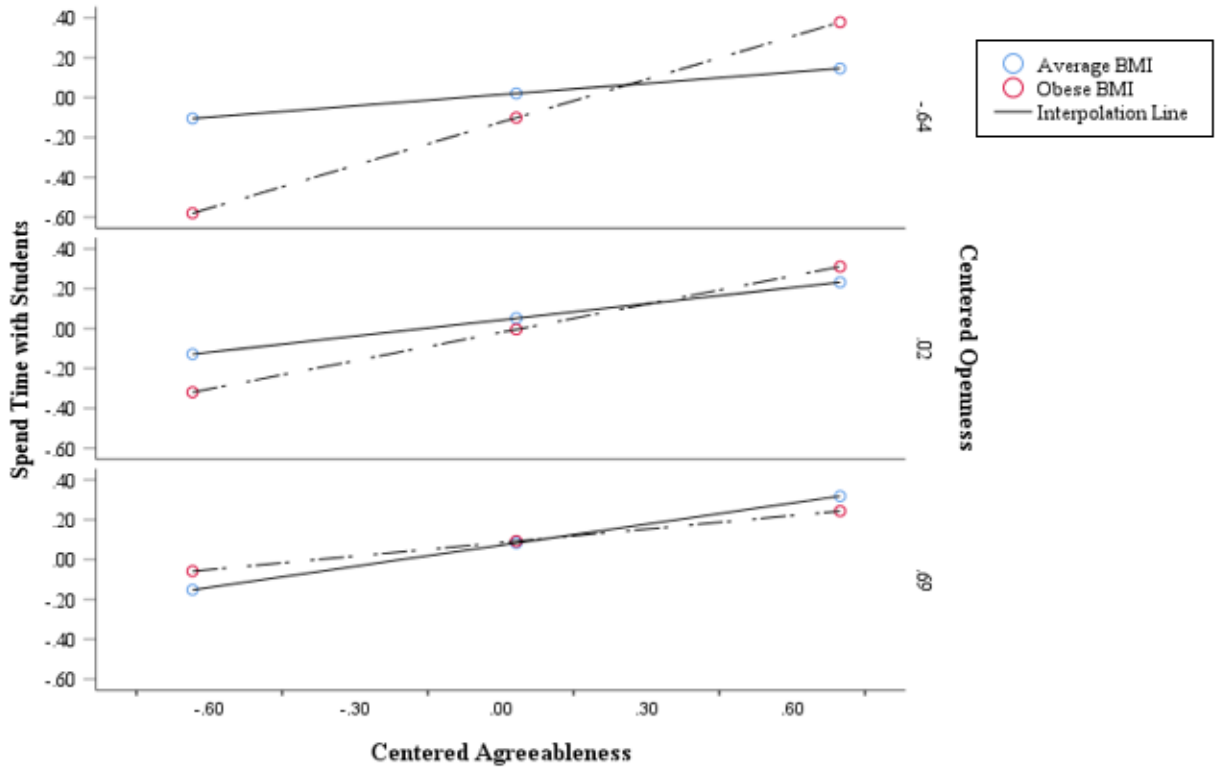
Laziness Rating Scores for Student BMI x Student Health/Fitness Profile Interaction



Note. N = 286. The above graph shows laziness scores based on student BMI and student health/fitness profiles. The overall interaction was significant. PE teachers rated obese students with unhealthy profiles as lazier than obese students with healthy profiles. Teachers also rated average weight students with unhealthy profiles as lazier than average weight students with healthy profiles. Error bars show standard errors.

Figure 4

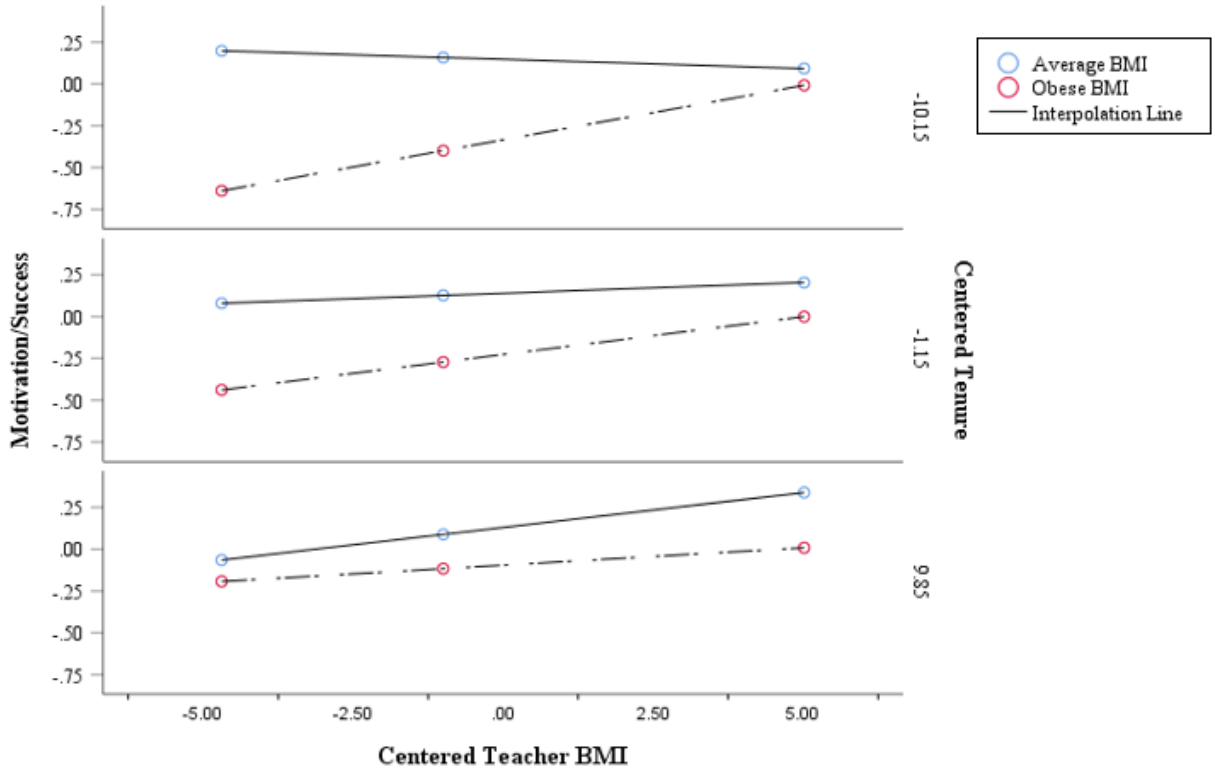
Teacher Agreeableness x Teacher Openness x Student BMI Interaction Predicting Willingness to Spend Time with Students



Note. N = 286. The above graphs show the interaction between student BMI, teacher agreeableness, and teacher openness in predicting teachers' willingness to spend time with students. The top graph depicts the relationship between student BMI and teacher agreeableness at low levels of teacher openness; teachers low in both openness and agreeableness were less willing to spend time with obese students. Student BMI and teacher agreeableness did not significantly interact to predict willingness to spend time with students at mean levels of teacher openness (middle graph) or high levels of teacher openness (bottom graph).

Figure 5

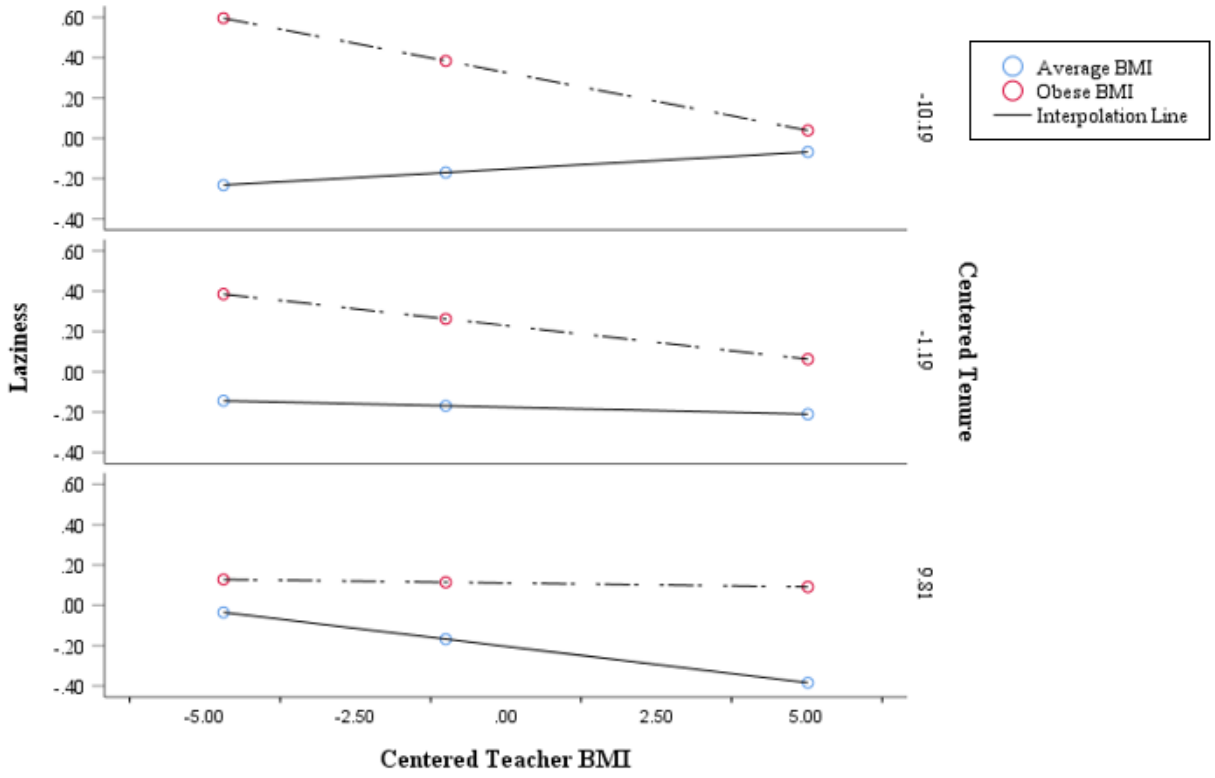
Teacher Tenure x Teacher BMI x Student BMI Interaction Predicting Motivation/Success



Note. N = 286. The above graphs show the interaction between student BMI, teacher BMI, and teacher tenure in predicting teachers' ratings of student motivation/success. The top graph depicts the relationship between student BMI and teacher BMI at low levels of teacher tenure; newer teachers who also had a lower or mean level BMI rated obese students as less motivated/successful than average weight students. Teachers at the 50th percentile for tenure (middle graph) who also had a lower or mean level BMI rated obese students as less motivated/successful than average weight students. Teachers with high tenure (bottom graph) did not exhibit these weight biases.

Figure 6

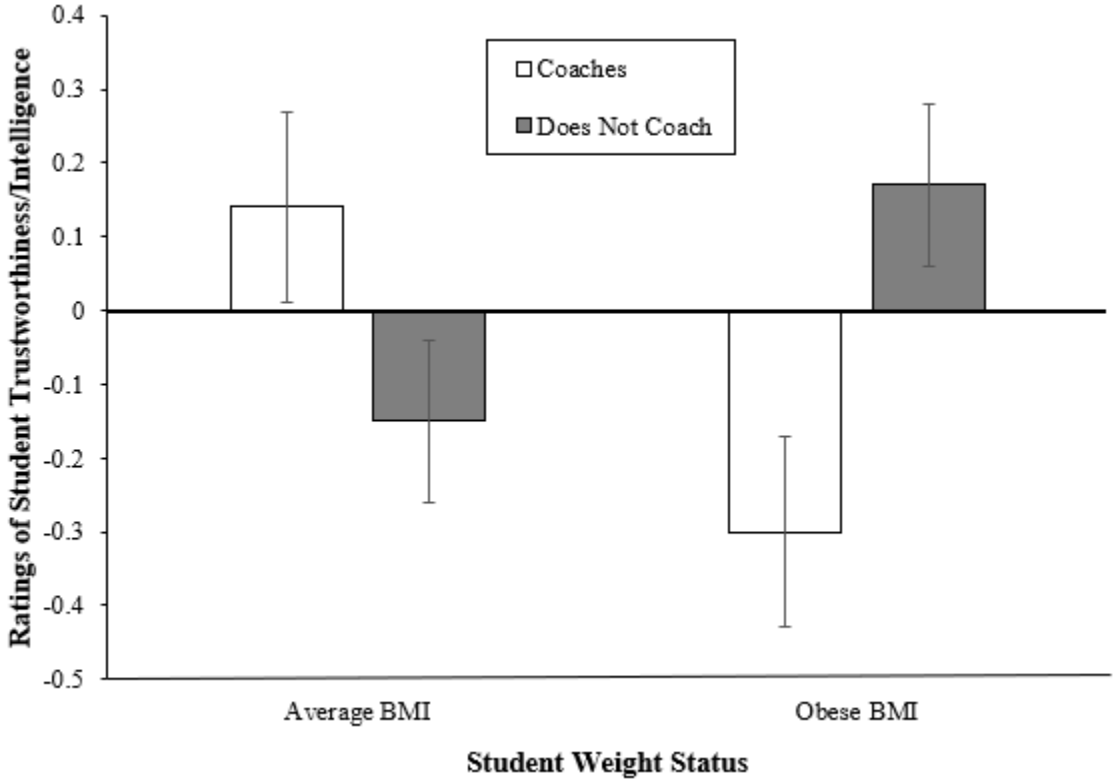
Teacher Tenure x Teacher BMI x Student BMI Interaction Predicting Laziness



Note. N = 286. The above graphs show the interaction between student BMI, teacher BMI, and teacher tenure in predicting teachers' ratings of student laziness. The top graph depicts the relationship between student BMI and teacher BMI at low levels of teacher tenure; newer teachers who also had a lower or mean level BMI rated obese students as lazier than average weight students. Teachers at the 50th percentile for tenure (middle graph) who also had a lower or mean level BMI rated obese students as lazier than average weight students. Teachers with high tenure (bottom graph) did not exhibit these weight biases.

Figure 7

Trustworthiness/Intelligence Rating Scores for Student BMI x Coach Status Interaction



Note. N = 286. The above graph shows trustworthiness/intelligence scores based on student BMI and PE teachers' coaching status. The overall interaction was significant. Coaches rated obese students as less trustworthy/intelligent than did non-coaches. Error bars show standard errors.