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PHYSICAL EDUCATORS AND AWARENESS OF IMPACT: WEIGHT BIASES BY GENDER AND IMPLICATIONS ON THE WELL-BEING OF STUDENTS

by

ARIA J. GREEN

Presented to the Faculty of the Honors College of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

HONORS BACHELOR OF LIBERAL ARTS IN PSYCHOLOGY

THE UNIVERSITY OF TEXAS AT ARLINGTON

December 2019

ACKNOWLEDGMENTS

I would like to start by thanking my faculty mentor, Dr. Lauri A. Jensen-Campbell, for allowing me into her research lab and guiding me through this project. Without her belief in me, immense patience, and passion for psychology, this would not have been possible. Additionally, I want to thank Abigail C. Heller, whose master's thesis was rooted in this project as well. Abby's sense of humor and caring made it a joy to work alongside her. With that, I would also like to extend my appreciation to the members of Dr. Jensen-Campbell's research lab that contributed to this project, and for offering their support. I hope to have lasting relationships with my mentors and peers as colleagues and friends.

To my friends, old and new – Kylie Leasure, Ashley Karaganis, Andrew Hall, David Ramirez, Mikey Rangel-Bron, Alyson Emery, Victoria Dang, Jed Aquillo, Luis Vargas, and many others – thank you for your friendship, your caring, all the times you've encouraged me and cheered for me. The wonderful people around me make my accomplishments even more enjoyable.

Last, but certainly not least, to my parents, Phillip and Diann Green: we did it. Everything you have done for me made this possible, and I hope I continue to make you proud. This may be the first college degree (and thesis) with our family name on it, but I promise it will not be the last. I love you. Thank you.

November 13, 2019

ABSTRACT

PHYSICAL EDUCATORS AND AWARENESS OF IMPACT:
WEIGHT BIASES BY GENDER AND IMPLICATIONS
ON THE WELL-BEING OF STUDENTS

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The University of Texas at Arlington, 2019

Faculty Mentor: Lauri A. Jensen-Campbell, Ph.D.

Educators are considered primary socializers for children, meaning they have a significant impact on behavioral, academic and interpersonal development. Physical educators, particularly male educators, have been found to express persistent biases against students who appear or are labeled overweight. These shown biases can negatively affect child development; if educators are aware of their impacts, these negative effects could be prevented. This study looked for evidence on the relationship between influential awareness, expressed weight biases and gender of physical educators. Physical educators were asked to fill out a survey which included an influence awareness scale, demographics, personality measures and then reviewed student profiles which differed in Body Mass Index (BMI) and health-related behaviors and answered questions to reveal any potential weight biases. Findings include significant interactions between teach gender, student

gender, BMI, and student health habits, as well as correlations between self-rated influence and weight bias outcomes.

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CHAPTER 1

INTRODUCTION

1.1 Statement of Purpose

Children are our future. With that, it is the responsibility of the adults in their lives to set them up for success and ensure that the tremendous influence they have on children is used responsibly. Alongside parents, teachers are considered among the primary socializers for children, meaning that they have a significant impact on children's development, including behavioral engagement, academic achievement and development of interpersonal skills (Bryce, Bradley, Abry, Swanson, & Thompson, 2018). Teacher-student relationships have such a significant influence, in fact, that they have been found to be a meaningful mediator between parent-child attachment and resulting behavioral problems in children (Huang, Xie, & Zhoue, 2016). It is important that educators are aware of the influence they have on students, and how it can be used to aid development.

Often, the teachers examined in developmental research are exclusively classroom teachers. However, even special activities educators, such as physical education, play an important role in socializing children and introducing them to aspects of health and fitness. Greenleaf, Martin, and Rhea (2008) found that students who are training to become physical educators have stronger biases against students who appear to be overweight or are labeled as such on the Body Mass Index (BMI) than students in other disciplines (as cited in Peterson, Puhl, & Luedicke, 2012). In a previous study, male physical educators had stronger weight biases against students than female educators and were less likely to

intervene when overweight students were being victimized by their peers (Peterson et al., 2012). These weight biases could lead to negative effects on children's development and their relationship with physical activity by reducing exercise intentions when weight bias becomes pervasive (Pearl & Dovido, 2015). If physical educators have an awareness of their impact on students and use it to carefully monitor their expressions of weight biases, it may leave children unburdened and lead them to better succeed in academics and physical education.

A step in addressing this potential issue is to examine the relationship between influential awareness on students and expressed weight biases in physical education teachers. There is little to no previous research on teacher self-assessment of influence on students, even though there is evidence that teachers model behaviors that directly influence student actions and that teachers are unaware of their own biases (Finn, Seymour, & Phillips, 2019). This study sought to find such evidence and examine the potential gender differences in expression of these weight biases.

1.2 Weight Biases

Weight bias, also known as anti-fat bias, is often defined as the unfair assessment of people who are overweight or have an above average Body Mass Index (BMI) (Finn et al., 2019). Pervasive in our modern culture, weight bias has largely shaped people's implicit anti-fat attitudes and has increased over time. Media 'fat-shaming' of celebrities often leads to a spike in women's overall weight biases, meaning that feedback on people's worth in relation to their weight or appearance can be registered on a cultural level (Ravary, Baldwin, & Bartz, 2019). Weight bias is so ubiquitous, in fact, that it is present in children as young as 3 years old and is continually seen in elementary aged students expressing

negative attitudes towards heavier children (Harriger, Trammell, Wick, & Luedke; Rex-Lear, Jensen-Campbell, & Lee, 2018).

One example of observable weight bias in education settings is teachers giving out differing grades and perceptions of student sufficiency, such as perceived effort, need for tutoring and overall academic success based on a students' weight (Finn et al., 2019). Other measures of bias include prejudiced judgments of a person's motivation, self-confidence and personality traits (such as cleanliness or laziness) based on their weight. Weight bias could also be indicated by how much time an adult is willing to spend with a child based on their weight. Additionally, weight bias is often influenced by context of perception by teachers and educators (i.e., viewing it as a health-related problem or a flaw in character).

1.2.1 Weight Biases and Gender

There is conflicting evidence for how gender interacts with weight biases. In some studies, women have been shown to have stronger expressions of weight biases (Ravary, Baldwin, & Bartz, 2019), but interestingly enough, are also more susceptible to reduction of weight biases through exposure of different body types and when perceiving obesity as a disease (Smirles & Lin, 2018; MacInnis, Alberga, Nutter, Ellard, & Russel-Mayhew, 2019). In preschool age children, girls were also shown to demonstrate higher weight biases than boys (Harriger et al., 2019). A possible explanation for women having stronger expressed weight biases is because women are exposed to unrealistic beauty standards and stronger biases in relation to their weight and appearance. This could lead to overall higher weight bias internalization for women than men. Weight bias internalization occurs when weight biases expressed onto an individual are adopted into someone's self-concept. Weight bias internalization is significantly associated with expressed weight biases and

psychological distress (O'Brien et al., 2016). This means that if women are exposed to stronger weight biases and more susceptible to weight bias internalization, it is not unreasonable to expect them to express stronger weight biases onto others, especially other women.

However, in other studies, men have been shown to have stronger weight biases and internalization of weight biases across four western cultured countries (Puhl et al., 2015), and male physical educators specifically were found to be less likely to intervene on weight-based victimization among students (Peterson, et al. 2012). According to Carels, Rossi, Solar, and Selensky (2018), men viewed those who were formerly overweight less favorably, regardless of their current weight and appearance, indicating a potentiality of higher weight prejudice.

The case for men having stronger weight biases expression than women could be made by the same point: women are more exposed to unfair standards and expectations based on appearance and weight. This internalization could potentially have an opposite effect, making women more aware of the damage that weight biases can have. Women having a higher awareness could indicate a lower expression of weight biases onto others and could potentially be more receptive to weight bias interventions than men. This study will further investigate the possibility that the gender of the physical education teacher could influence weight bias attitudes towards students.

1.2.2 Weight Biases Impact on Children

Due to negative attitudes against overweight body types, children who are overweight are frequently and extensively victimized by their peers (Puhl et al., 2015). This culture of weight-based victimization is often perpetuated by adults by providing mixed information

on social interactions, ignoring nonphysical bullying, and encouraging inappropriate curriculum selections. This culture instilled an environment of fear in students to report bullying to those in authority and feeling unsafe in physical education (O'Connor & Graber, 2014).

In a 2017 study by Zuba and Warschburger, weight bias internalization was linked to psychosocial problems in development. A higher BMI for students could mean that they are more likely to experience peer victimization than their average weight peers. These stronger effects can lead to restrained eating behaviors, higher occurrences of reported emotional problems, and increased conduct issues. Internalized weight bias has been continually associated with depression, anxiety, psychological distress and body image dissatisfaction in children (Zuba & Warschburger, 2017). Higher levels of weight bias internalization were also related to reported binge eating and emotional-based eating behaviors in adolescents (Puhl & Himmelstein, 2018). Overweight children were also found to have higher levels of weight-related self-stigma, which has been found to be associated with more mental health problems overall (Chan et al., 2019).

Weight bias often has the opposite of the desired effect. Rather than motivating positive changes and healthier lifestyles, weight stigma experienced by children continues to contribute to behavior such as binge eating, social isolation, avoidance of health care services, decreased physical activity and continually increased weight gain (Pont, Puhl, Cook, & Slusser, 2017). Weight biases are actively harming children's mental and physical health. When weight bias is received from physical educators, who often are a child's main association and introduction to physical health, these effects could be exacerbated.

1.3 Educators' Importance

As discussed in the first section of this chapter, teachers are a primary socializer for children. While most of the previous literature examines classroom teachers exclusively, many of the results could easily be applied to all teachers in a student's school environment, including physical education teachers. In study by Vandenbroucke et al. (2018), student-teacher relationships were measured through their closeness, conflict and dependency. These measures were linked to visuospatial development, reading achievement and overall working memory performance in students – demonstrating the direct effects teacher relationships have on child cognition. When teachers encouraged and rewarded independent explorations in learning, students were found to excel in all three of the above-mentioned developmental markers. By encouraging students and providing them with room for growth, teachers can greatly benefit student development.

Another study by Lei, Cui, and Chiu (2018) found that teacher support and a student's academic emotions (either positive or negative) had strong relationships, with student characteristics moderating some of these effects. For all groups of students, perceived teacher support and academic emotions were linked. The more support students felt they received, the more positive academic emotions they had, while less support predicted more negative academic emotions. Further research has also indicated that student engagement serves as a mediator between affective teacher-student relationships and student academic achievement (Roorda, Jak, Zee, Oort, & Koomen, 2017). According to Bryce et al.'s 2018 study, primary socializer adults have a strong influence on the development of a child's behavioral engagement, indicating that this could be a feedback cycle – when students have positive relationships and emotions associated with academics

and their teachers, they are encouraged to engage more which strengthens both the relationships and student achievement.

1.3.1 Physical Education Teachers' Impact

Physical education (PE) teachers are often a person's lasting introduction to physical activity and enjoyment of it. A previous research study found that students' perceptions of physical education teachers have strong relationships with well-being, knowledge and overall motivation. Student perception of their physical education teachers' support of their autonomy was shown to have a positive relationship with positive student outcomes in wellness, knowledge and performance in PE. Conversely, if students perceived their physical educators as exerting control over them, it negatively impacted student well-being and knowledge (Behzadnia, Adachi, Deci, & Mohammadzadeh, 2018).

It can be inferred that physical educators have a direct impact on how enjoyable children may or may not find physical activity. Children who enjoy physical education have been shown to participate more in physical activity, spend more days being physically active overall and are often healthier as a result (Jin, Yun, & Agiovlasitis, 2018). Furthermore, when physical educators take an active and participatory role rather than a passive one, children spend significantly more time engaging in physical activity (Veldman, Stanley, Okely, & Jones, 2018). The frame through which physical educators present physical activity matters, too, as demonstrated in a 2016 study in which physical educators implemented a program designed to improve coping skills and reduce stress perception related to physical activity in adolescent students. This program was shown to improve overall adaptive coping skills for students, suggesting that physical activity has psychological applications (Lang et al., 2016).

1.3.2 Physical Education Teachers' Biases

Knowing the impact physical educators have on students, it is even more concerning to consider the systematic pattern of weight bias found in exercise professionals (Panza et al., 2018). Existing literature has consistently outlined evidence of weight bias in exercise and nutrition professionals, a group to which physical educators belong. Panza et al.'s 2018 literary analysis contributes that weight bias expression has been shown to reinforce weight gain and negative health outcomes. Therefore, weight biases expressed by physical education teachers could reduce quality of outcomes for students, and damage students' emotional and physical health.

In Peterson et al.'s 2012 research study, male physical educators were found to be less likely to intervene on students being victimized because of their weight. This point is a cause for potential concern, as 62.3% of public-school physical educators were male (National Center for Education Statistics, 2009 as cited in Peterson et al., 2012). This lack of intervention on student victimization could be explained by the normalization of weight-related victimization (Bradshaw, Sawyer, & O'Brennan, 2007 as cited in Peterson et al., 2012). Both parents and teachers serve a role in reducing weight-based bullying among students. In an international cross-sectional study, most participants viewed parents, teachers and school administrators as playing a critical role in reducing weight-based victimization (Puhl et al., 2015). When teachers fail to act or maintain weight-based bullying, a large part of the responsibility for negative outcomes, and for intervention, may fall onto them.

1.4 Hypotheses

Adults can make or break a child's identity and success, as environment plays an important role in development. Mental health problems and issues of peer victimization are being discussed more and more. It is almost too easy for adults to forget just how much their words and behaviors impact the children around them, even if it is not directed towards that child. If research could expand on the effects of adult influence on children, as well as how we can increase awareness in adults of their influence on children, perhaps it could mitigate mental health struggles for children and adolescents.

With less mental health issues and internalized biases weighing down their minds, children are given better opportunity to flourish academically, achieve the goals they set for themselves, improve their interpersonal skills and ultimately, become successful and productive members of society. If primary socializing adults are aware of how they can do this, or interventions are developed for those who are not aware, the expression of biases towards children could be reduced.

As mentioned in the beginning of this chapter, there is very little research on teachers' self-awareness of student influence or expressed weight biases. There are also previous studies indicating gender differences in physical educators' observable weight biases, suggesting that male physical educators may need more intervention regarding this issue. In response to the listed findings and inferences, the following study examined data collected via a survey distributed amongst elementary-school level physical educators across the state of Texas. It was expected that the data would show that the more self-aware physical educators are of their influence with students, the less likely they would be to express weight biases. something that could actively harm student achievement. It was also

expected that female educators would be more aware of their influence, and as a result, show less weight biases than male physical educators. This study closely examined what weight-based inferences might be made about children by teachers and allow for further exploration of teacher perceptions of influence on students.

CHAPTER 2

METHODS

2.1 Participants

146 certified physical educators (56 male) from the state of Texas participated in this experiment via a voluntary online survey. The age range of participants was 23 years old to 66 years old, with a mean age of 44.04. A total of 82.2% of participants classified themselves as white, 6.8% as black, 0.7% as Asian, 8.2% as multiracial, and 2.1% of participants declined to answer for their race. For ethnicity, 12.5% of white participants identified themselves as Hispanic, 10% of black participants identified as Hispanic, and 100% of participants who picked "Other/Multiracial" or "Decline to Answer" identified themselves as Hispanic. The physical educators sampled in this survey had a mean tenure of 15 years with a standard deviation of 8.98 years, and a range of 1 year of experience to 37 years of experiences. The mean number of students each physical educator had was 50.03 students with a standard deviation of 15.36 and a range of 20 students to 75 students total. A total of 54.8% of participants said they taught in a suburban school district, 39% urban, 5.5% rural, and 0.7% of participants defined their school district as "other". Among the teachers, 31.5% of participants said that they were also coaches for sports teams, while 68.5% said they were not.

The participants were told before the survey that the interest of the study is what can be concluded about students from typical physical education reports. After completing

the survey, participants were debriefed on the actual nature of the study concerning physical educators' weight biases. Educators were pre-screened to make sure they were at least 18 years of age and a certified physical education teacher in the state of Texas. Participants were also offered the chance to enter a raffle to win a gift card to a local sporting goods store. All participants remained anonymous and their entries into the raffle were not linked to their survey results.

2.2 Design

This experiment was designed to examine a 2 (Gender of PE Teacher) X 2 (Gender of Student) X 2 (BMI: Average vs. Overweight) X 2 (Health Habits: Poor vs. Good) ANOVA for each dependent measure. Weight biases were measured by the personality ratings physical educators gave students based on student BMI and fitness profiles. For the purposes of this study, we looked at teacher ratings of students' laziness, carefulness, and disorganization. The relationship between these factors and physical educators' self-rated influence on students and other community members were examined for the purposes of this study.

2.3 Materials

Physical education teachers were recruited via e-mail; e-mail addresses were obtained from Texas school district websites for both public elementary level schools. The survey included questions about the physical educators' demographics, Big Five Personality Inventory measures, measures of sport-related mindset (growth vs. fixed), and questions about the nature of their job, such as perceived influence on students, parents, their sports teams and school administrators on a Likert Scale, measured from none at all (1) to a great deal of influence (5). Participants were then asked to assess one of eight

student profiles which displayed the fictional students' gender, age, Body Mass Index score, school-mandated fitness test scores and a quiz taken by the student for health-related behaviors. The fitness profiles consisted of a mock student fitness pacer test and Youth Risk Behavioral Inventory survey to make them realistic. After viewing the randomly assigned student profile, participants were then asked to evaluate the student. Participants rated their perception of the students' motivation and likelihood of success in class, how much time the educator would be willing to spend with the student one-on-one, and whether they would want that student in their class or on their sports team. Lastly, the participant was asked to evaluate the student on several personality traits, such as laziness and disorganization. Afterwards, participants were debriefed, allowed to submit their information for a raffle to win a gift card to a local sporting goods store, and thanked for their participation. The data collected was entered in JASP, which was used to analyze the data.

CHAPTER 3

RESULTS

3.1 Analyses Plan

First, we examined whether the gender of the PE teacher influenced ratings of the students' personality. A 2 (Gender of PE Teacher) X 2 (Gender of Student) X 2 (BMI: Average vs. Overweight) X 2 (Health Habits: Poor vs. Good) ANOVA was conducted for each dependent measure. Outcome measures for students' rated personality were laziness, disorganization, and carefulness. These qualities are often associated with weight stigma, with people who are overweight being rated as lazier, more disorganized and less careful (Hu, Parde, Hill, Mahmood, & O'Toole, 2018).

Next, we examined whether there was a relationship between gender of the PE teacher self-ratings of influence on students, parents, teachers, and administrators. A 2 (Gender of PE Teacher) X 4 (Influence) repeated measures ANOVA was conducted. Additionally, we looked at the correlations between influence and student qualities separately by male and female PE teachers. The outcome measures for weight bias were laziness, disorganization, and carefulness, as well as potential moderation by PE teacher gender was considered.

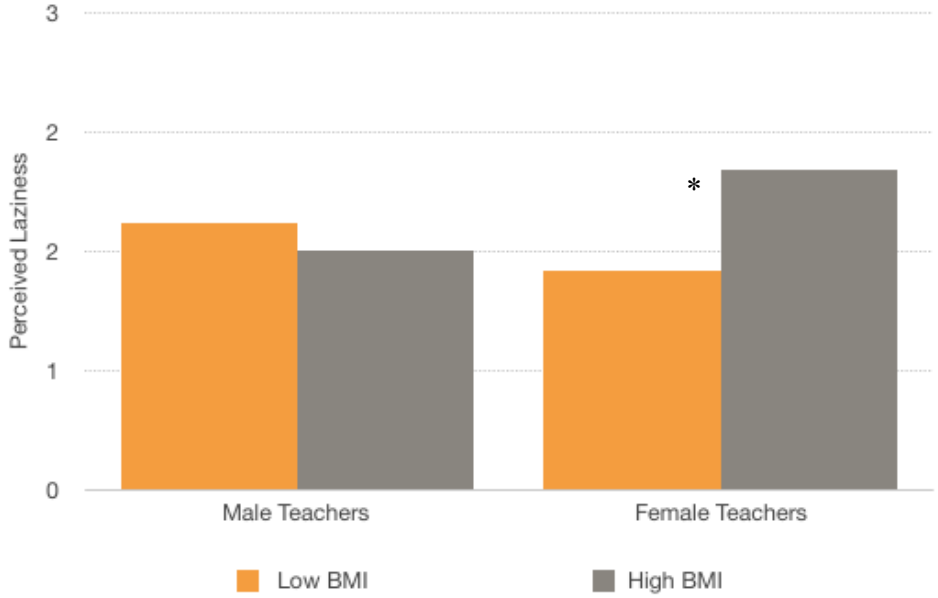
3.2 Did Teacher Gender Influence Ratings Based on BMI and Health Habits?

3.2.1 Laziness

There was a main effect for health behaviors, $F(1,130) = 63.23$, $p < .001$, $\varpi^2 = .293$. As predicted, gender of the teachers influenced ratings; there was a teacher gender X

student BMI interaction, $F(1, 130) = 5.27$, $p = .02$, $\varpi^2 = .02$. Target children with poor health habit scores were rated more negatively ($M = 2.33$, $SE = 0.113$) than were students with good health habits ($M = 0.95$, $SE = 0.122$). There was a simple effect for laziness ratings of students for female teachers, $F(1, 130) = 10.58$, $p < .001$. Female teachers rated high BMI students as lazier ($M = 2.00$, $SE = 0.148$) than they did students with average BMI ($M = 1.38$, $SE = 0.147$), $t = -3.19$, $p = .019$. For male teachers, there was no effect of BMI on ratings of laziness, $F(1, 130) = .38$, $p = .54$, (Average BMI $M = 1.68$, Average BMI $SE = 0.17$; High BMI $M = 1.51$, High BMI $SE = 0.22$).

Figure 3.1: Perceived Laziness Interactions between Teacher Gender X Student BMI



Note: *$p < .05$

3.2.2 Carefulness

There was again a main effect for health habits, $F(1, 130) = 10.59$, $p = .001$, $\varpi^2 = .057$. Students with better health habit scores were overall rated as more careful ($M = 3.18$, $SE = 0.11$) than students with poorer health habit scores ($M = 2.66$, $SE = 0.12$). There was also a main effect for student gender, $F(1, 130) = 5.74$, $\varpi^2 = .028$. Girls were rated as more careful ($M = 2.84$, $SE = 0.11$) than boys ($M = 3.00$, $SE = 0.12$). These main effects were

qualified by a student gender X health habits interaction, F (1, 130) = 5.67, p = .019, ϖ^2 = .028. For boys, there was a simple effect for health habits, F(1, 130) = 18.19, p < .001. Boys with poorer health habit scores were rated as less careful (M = 2.55, SE = 0.17) than boys with better health habits (M = 3.46, SE = 0.18). For girls, there was no significant evidence found that health habits influence carefulness ratings, F(1, 130) = .68, p = .41 (Good Health Habits M = 2.91, Good Health Habits SE = 0.14; Poor Health Habits M = 2.77, Poor Health Habits BMI SE = 0.16).

Lastly, there was a teacher gender X health habits interaction for carefulness ratings, F(1, 130) = 4.174, p = .031, $\boldsymbol{\omega}^2$ = .025. There was a simple effect for health habits for female teachers, F(1, 130) = 18.05, p < .001. Female teachers rated students with poorer health habits as less careful (M = 2.28, SE = 0.14) than students with better health habits (M = 3.18, SE = 0.14), t = -4.62, p < .001. There was no simple effect found for male teachers, F(1, 130) = .03, p =.87. Male teachers did not differentiate between students with good health habits (M = 3.19, SE = 0.18) and students with poor health habits (M = 3.04, SE = 0.18), t = -.60, NS.

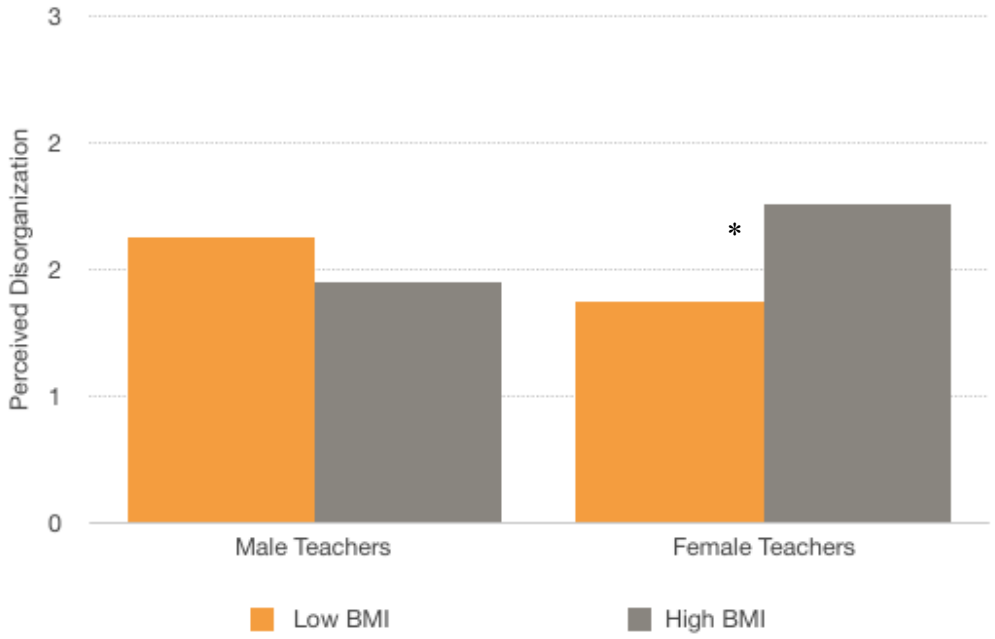
Figure 3.2: Perceived Carefulness between Teacher Gender X Student Health Habits

Note: *$p < .05$

3.2.3 Disorganization

There was a main effect for health habits, $F(1, 130) = 27.47$, $p < .001$, $\omega^2 = .13$. Students with better health habit scores were rated as less disorganized ($M = 1.13$, $SE = 0.12$) than students with poor health habits ($M = 2.02$, $SE = 0.12$). There was again a participant gender X student BMI interaction, $F(1, 130) = 6.11$, $p = .015$, $\omega^2 = .027$. For female teachers, there was a simple effect of BMI on ratings of disorganization $F(1, 130) = 9.54$, $p = .002$. Female teachers rated high BMI students as less organized ($M = 1.88$, $SE = 0.15$) than they did students with average BMI ($M = 1.30$, $SE = 0.14$), $t = -3.19$, $p = .019$. There was no evidence that BMI influenced ratings for male teachers when rating students for disorganization, $F(1, 130) = .001$, $p = .98$.

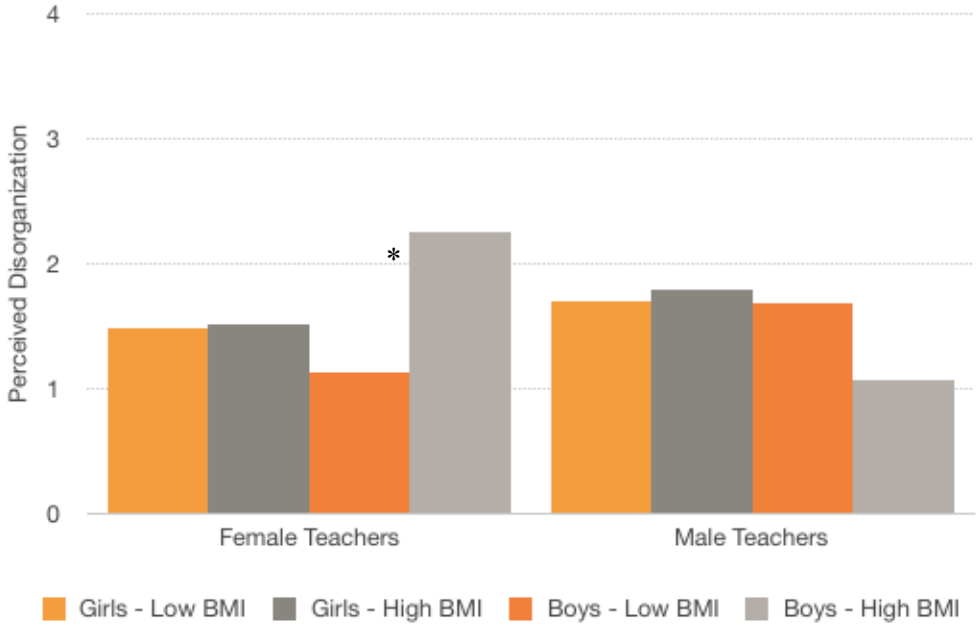
Figure 3.3: Perceived Disorganization between Teacher Gender X Student Health Habits



Note: *$p < .05$

Additionally, there was a three way interaction between participant gender X student gender X BMI, $F(1, 130) = 7.17$, $p = .008$, $\omega^2 = .032$. The simple main effect for Female teachers rating boys was significant for disorganization, $F(1, 130) = 14.29$, $p < .001$. Female teachers rated boys with higher BMI ($M = 2.25$, $SE = 0.20$) as more disorganized than boys with lower BMI ($M = 1.12$, $SE = 0.22$). There was no evidence that female teachers differentiated between girls with high BMI ($M = 2.25$, $SE = 0.20$) versus average BMI ($M = 1.12$, $SE = 0.22$), $F(1, 130) = .56$, $p = .45$. There was no evidence of any simple main effects for male teachers, $F < .62$, $p > .44$.

Figure 3.4: Perceived Disorganization: Teacher Gender, Student Gender, and BMI



Note: *$p < .05$

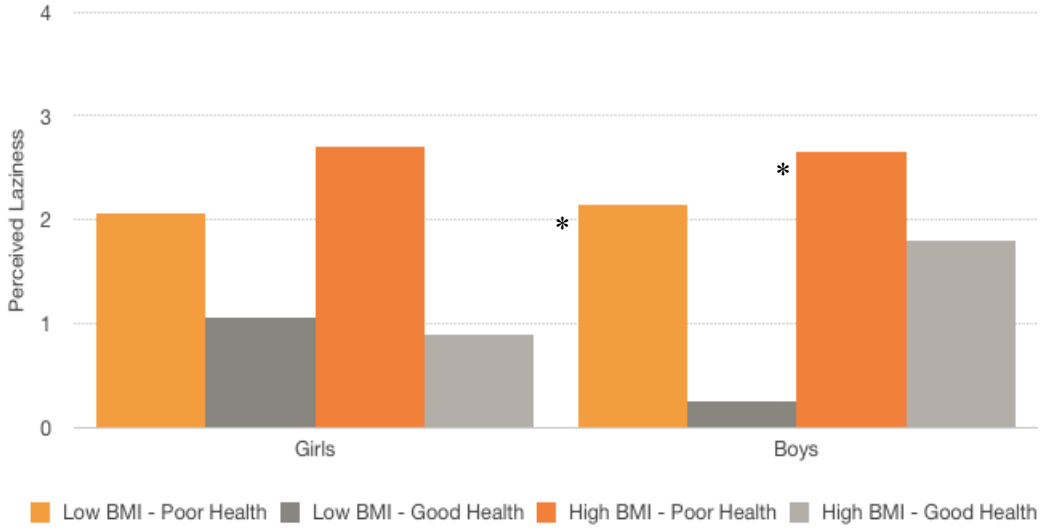
3.3 Four Way Interactions of Teacher Gender, Student Gender, Health Habits and BMI

3.3.1 Laziness

Lastly, there was a four way interaction: teacher gender X student gender X health habits X BMI, $F(1, 130) = 5.21$, $p = .02$, $\varpi^2 = .02$. Female teachers were found to rate girls with high BMI and poor health habits as lazier ($M = 2.64$, $SE = 0.32$) than target girls with high BMI and good health habits ($M = 1.79$, $SE = 0.27$); $t = 4.29$, $p_{bf} < .004$. Female teachers did not differentiate between target girls with low BMI and good health habits ($M = 1.06$, $SE = 0.22$) and girls with low BMI and poor health habits ($M = 2.05$, $SE = 0.30$), $t = 2.66$, NS. Female teachers also did not differentiate between boys with high BMI and good health habits ($M = 1.79$, $SE = 0.27$) and boys with high BMI and poorer health habits ($M = 2.64$, $SE = 0.32$), t = 2.06, NS. However, female teachers did rate boys with low BMI

and poor health habits as lazier (M = 2.14, SE = 0.30) than boys with low BMI and good health habits (M = 0.26, SE = 0.34), t = 4.14, p_{bf} < .007.

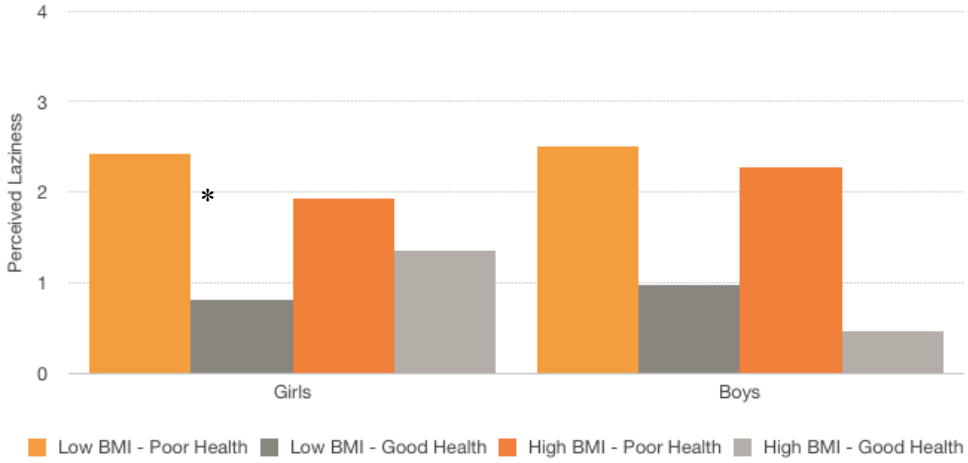
Figure 3.5: Female Teachers Simple Three-Way Interaction for Laziness



Note: *p< .05

Male teachers rated female students with low BMI and poor health habits as lazier (M = 2.43, SE = 0.36) than girls with low BMI and good health habits (M = 0.80, SE = 0.26), t = 3.66, p_{bf} = .04. Girls with high BMI and poor health habits were also rated as lazier (M = 1.92, SE = 0.43) than girls with low BMI and good health habits. There was no significant evidence that male teachers differentiated between boys with low BMI and poor habits (M = 2.5, SE = 0.39) and boys with low BMI and good health habits (M = 0.26, SE = 0.34), t = 2.96, NS. There was also no evidence that male teachers differentiated between girls with high BMI and poor habits (M = 1.92, SE = 0.43) and girls with high BMI and good health habits (M = 1.36, SE = 0.36), t = 1.09, NS.

Figure 3.6: Male Teachers Simple Three-Way Interaction for Laziness

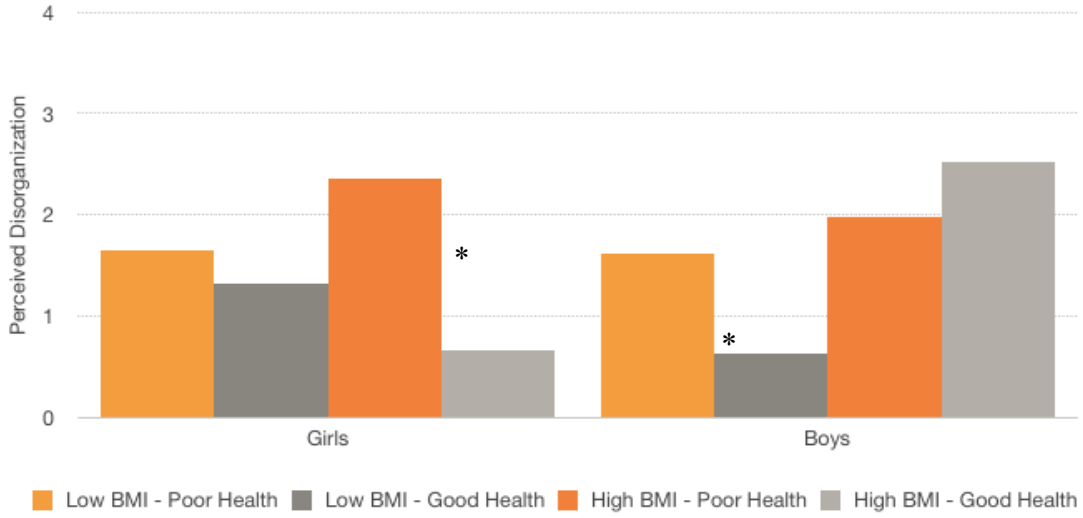


Note: *$p < .05$

3.3.2 Disorganization

Finally, there was a participant gender X teacher gender X BMI X health habits interaction, $F(1, 130) = 6.46$, $p = .01$, $\omega^2 = .029$. More specifically, female teachers rated target boys with low BMI and good health habits as less disorganized ($M = 0.63$, $SE = 0.33$) than target boys with high BMI and good health habits ($M = 2.52$, $SE = 0.26$), $t = 4.50$, $p = .002$. Female teachers did not differentiate between girls with low BMI and good health habits ($M = 1.32$, $SE = 0.22$) and girls with high BMI and good health habits ($M = 0.67$, $SE = 0.31$), $t = .173$, NS. Female teachers did rate target girls with high BMI and poor health habits as more disorganized ($M = 2.36$, $SE = 0.27$) than girls with high BMI and good health habits, $t = 4.10$, $p = .009$. There was no evidence that male teachers differed in their ratings of disorganization by gender of participant, BMI and health habits.

Figure 3.7: Female Teachers Simple Three-Way Interaction for Disorganization



Note: *p< .05

3.4 Does Teacher's Gender Predict Ratings of Influence?

3.4.1 Effects for Influence

There was a main effect for influence ratings, $F(3, 432) = 204.51$, $p < .001$, $\boldsymbol{\omega}^2 = 0.32$. Teachers thought that they had more influence over students than parents, $t = 20.28$, $p < .001$, Cohen's $d = 1.68$. They also rated themselves as having a more significant influence over students compared to fellow teachers, $t = 17.56$, $p < .001$, Cohen's d =1.45, and administrators, $t = 18.48$, $p < .001$, Cohen's $d = 1.53$. Additionally, teachers reported that they had more influence over teachers than they did for parents, $t = 3.12$, $p < .04$, Cohen's $d = 0.258$, or administrators, t =2.76, $p < .04$, Cohen's d =0.229. There was no statistically significant difference in ratings of influence between parents and administrators, $t = 0.57$, NS, Cohen's $d = 0.05$. There was no evidence that teacher gender moderated the effect of influence, $F(3, 432) = .213$, NS, $\boldsymbol{\omega}^2 = 0.00$.

Table 3.1: Influence Ratings by Teacher Gender

	Overall	Male Teachers	Female Teachers
Students	4.58 (0.65)	4.66 (0.61)	4.53 (0.67)
Teachers	3.20 (1.00)	3.27 (0.98)	3.14 (1.01)
Parents	2.99 (1.02)	3.00 (0.89)	2.98 (1.10)
Administrators	3.03 (1.02)	3.07 (0.89)	3.00 (1.09)

Note: Numbers in parentheses are standard deviations.

3.4.2 Correlation between Influence on Students and Weight Bias

Nearly all physical educators who participated in the survey indicated self-awareness of high influence on students. For example, all teachers rated themselves as being three or higher on student influence (which could have ranged from 1 to 5). Additionally, using a one-sample *t*-test, it was revealed that the mean for student influence (4.58) was significantly higher than 4.0, $t(145) = 10.80$, $p < .001$.

Using a correlation analyses, we found that the higher the teachers perceived their influence to be over students, the more likely they were to rate them as lazy, $r = 0.17$, $p = 0.04$, and disorganized, $r = 0.18$, $p = 0.028$. Even with overall high awareness of influence on students for participants ($M = 4.523$, $SE = 0.107$), PE teachers, especially female teachers, showed consistent weight biases. Higher ratings of laziness, disorganization and lower ratings of carefulness were all associated with high BMI student profiles for female educators.

Table 3.2: Correlations between Perceived Influence and Ratings

	Overall	Male Teachers	Female Teachers
Laziness	0.17*	0.12	0.21*
Disorganized	0.18*	0.14	0.21*
Carefulness	-0.03	-0.005	-0.07

Note: *$p < .05$

CHAPTER 4

DISCUSSION

This study was an examination of physical educators' weight biases, the gender differences between them, and teacher awareness of student influence. It was predicted that female educators would be less biased overall than male physical educators, and that this could be attributed to higher self-awareness of influence. Overall, this study found that 1) female educators, contrary to predictions, actually show more significant weight biases based on both BMI and health habits, 2) there was a significant four-way interaction between teacher gender, student gender, student BMI and student health habits in shown weight biases and 3) despite rating themselves as highly aware, physical educators still show consistent bias against students.

4.1 Gender Differences in Physical Educators' Weight Bias

There were conflicting prior studies on whether male or female educators would show stronger weight bias, wherein women were shown in some instances to have stronger weight bias (Ravary, Baldwin, & Bartz, 2019), and men in others (Puhl et al., 2015). It was predicted that female educators would show less weight bias, due to being more aware of their influence and a heightened sensitivity to unrealistic appearance standards, but, statistically, the opposite was found. Women showed more strong and consistent weight biases against students, despite still having high awareness of influence. Female physical educators found students with high BMI to be lazier and more disorganized, and students with poor health habits to be less careful. This may be attributable to women perpetuating

a cycle of weight bias, such that if women have a large amount of internalized weight bias, they will also have more weight bias against others. As mentioned in Chapter 1, women are also more prone to having reduced weight biases when interventions such as practiced perception of obesity as a disease and self-compassion exercises are used (MacInnis et al., 2019; Webb, Fiery, & Jafari, 2016). These results could be attributed to an overarching trend in which women are shown to be higher in indirect relational aggression (Vaillancourt & Krems, 2018). This study may offer support that female physical education teachers could benefit from interventions on weight bias.

Male physical educators are less likely to intervene when students victimize another student based on their weight, as found in Peterson et al.'s 2012 study. In reference to the results found, this could potentially indicate that female physical educators express more direct weight biases. Meanwhile, male physical educators may take a more passive stance in contributing to weight-based victimization, not actively projecting weight bias onto students, but still contributing by failing to act when students are victimized by others for their weight.

4.1.1 Four Way Interactions

It was hypothesized that teacher gender and student BMI would interact, but health habits and the gender of the student being rated had a statistically significant role as well. Teacher gender, student gender, student BMI, and student health habits all interact to contribute significantly to physical educators' biases. Female teachers rated target girls with high BMI and poor health habits as lazier and more disorganized than girls with high BMI and good health habits but didn't seem to significantly differentiate between target girls with low BMI regardless of their health habits. This suggests that in young girls,

female physical education teachers only monitor for poor health habits if a student is already overweight. This could be troubling in that unhealthy habits are overlooked in young girls if their BMI is low enough.

Conversely, female teachers did not differentiate between health habits for boys with high BMI, but rated boys with lower BMI and poor health habits as lazier than boys with low BMI and good health habits. A double standard may exist for female educators, such that girls who are overweight are closely monitored and boys who are of a smaller stature are closely monitored instead. For disorganization scores however, female educators did discern between BMI for target boys. Target boys with low BMI and good health habits were generally rated as more organized than target boys with high BMI and good health habits.

For male educators, however, there was no statistical evidence that they differed in their ratings of disorganization. For laziness, male teachers rated target girls with poorer health habits as lazier for both BMI conditions. There was no evidence that male teachers discerned any bias in boys based on BMI or health habits, or health habits between high BMI girls.

4.1.2 Self-awareness of Influence

Self-awareness of influence on students was expected to be negatively correlated with weight bias scorings, but the opposite was found for this as well. Physical educators' ratings of influence over students had a significantly positive correlation with laziness and disorganization scores on student profiles. These results could suggest that teachers' heightened awareness of influence may lead to a "tough love" mindset, such that teachers who believed they had more influence expressed more negative attitudes towards students,

thinking they were helping students. This misguided mindset may be especially troubling for overweight children. Future research needs to examine mindset and how it influences weight stigmatization.

4.1.3 Limitations and Future Directions

Very little research has been done to measure teacher's self-awareness of their influence on students, so there was no previous precedent on how to measure self-awareness. Some limitations could be that self-awareness of influence was asked broadly, such that physical educators were asked to rate the amount of influence they think they have over students, parents, other teachers and administrators. A more inclusive questionnaire of teacher perceptions of influence over students could possibly be made and utilized for future research, asking questions such as teachers' perception of impacts on student developmental milestones, as well as potential for expressing negative effects onto students. A more encompassing measure of how the teachers believe they effect their students could provide more insight into student-teacher interactions.

Additionally, all the teachers who took this survey were certified physical education teachers in the state of Texas. This study did not look at regional differences, which may play a factor. Other variables that have been previously shown to influence weight bias are BMI of the physical education teacher, as well as age of the teacher were also not accounted for in this study.

The results of this study could be used to bring attention to possible interventions for physical education teachers. The present results have implications for weight bias in physical education classrooms and how they might occur. Results suggest that weight bias expressed to students might be done so consciously, or without awareness of potential

damage to a child's relationship with physical activity and overall development. Physical education teachers appear to be aware of their influence over students but are misusing it by not being made aware of how their biases against students may be doing more harm than good. Future directions may include programming for physical education teachers on the effects of weight bias and how to healthily encourage students with high BMI or poor health habits, rather than viewing them negatively. Female educators may need more intervention on this issue, but previous research provides hope that they may be more receptive to the intervention as opposed to male teachers, as well (Smirles & Lin, 2018).

4.2 Conclusion

Firstly, we hypothesized that female physical education teachers would be more aware of their influence on students. This hypothesis was not supported, gender moderated no differences between self-awareness of influence for physical education teachers in this study. Both male and female physical education teachers indicated a significantly high awareness of high influence on students, and the higher the awareness, the stronger the weight biases. Secondly, it was hypothesized that as a result of being more aware, female physical educators would show less weight bias. Again, this was not supported, and the opposite was found to be true. Female physical educators tend to show more significant weight bias against students based on BMI and health habits. As discussed, this could be due to teachers' misguidedly believing that being harsher on students will push them to be better. Female teachers' stronger bias could also be attributed to their own experiences with weight bias and appearance standards.

With the proven negative consequences of weight bias on students inhibiting their psychosocial growth, causing unhealthy eating habits and food relationships, increasing

body dissatisfaction, and increased weight gain (Zuba & Warschburger, 2017; Pont, Puhl, Cook, & Slusser, 2017), weight bias harms students. This bias can be particularly damaging when it comes from primary socializing adults, like teachers, who contribute heavily to healthy emotional and academic development in children (Lei, Cui, & Chiu, 2018). It is important for our education system to identify where biases are being expressed, such as physical education classrooms, and intervene by educating and training teachers on how to encourage their students and facilitate a healthy growing relationship with physical activity and health. By doing so, our students can lead healthier lives all the way into adulthood.

APPENDIX A

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.

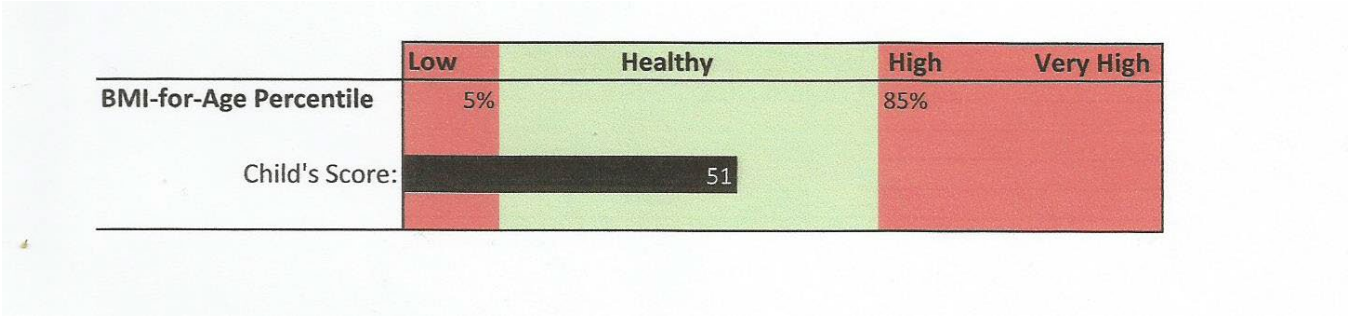
Below you are provided with demographic information, BMI, and fitness test scores for a 5th grade student. You are also provided with the student's answers to the Youth Risk Behavior Survey, indicating how often they engage in specific health-related behaviors. The researchers are using reports from 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.

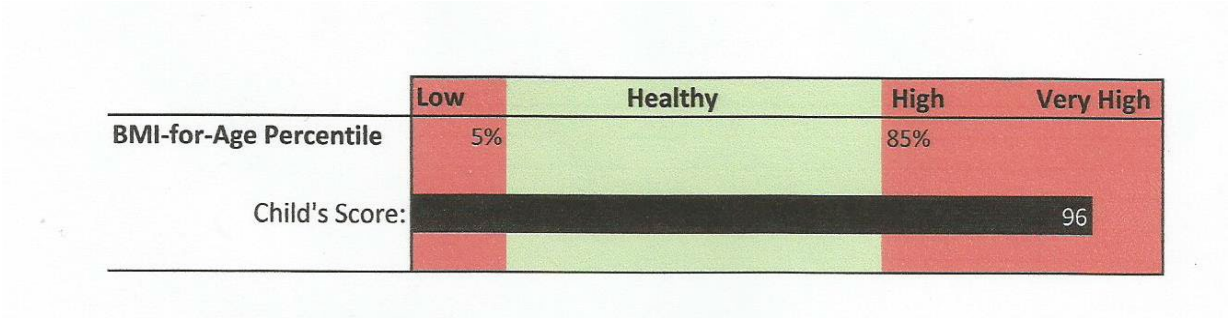
APPENDIX B

STUDENT BMI MARKERS

Average BMI Score



High/Overweight BMI Score



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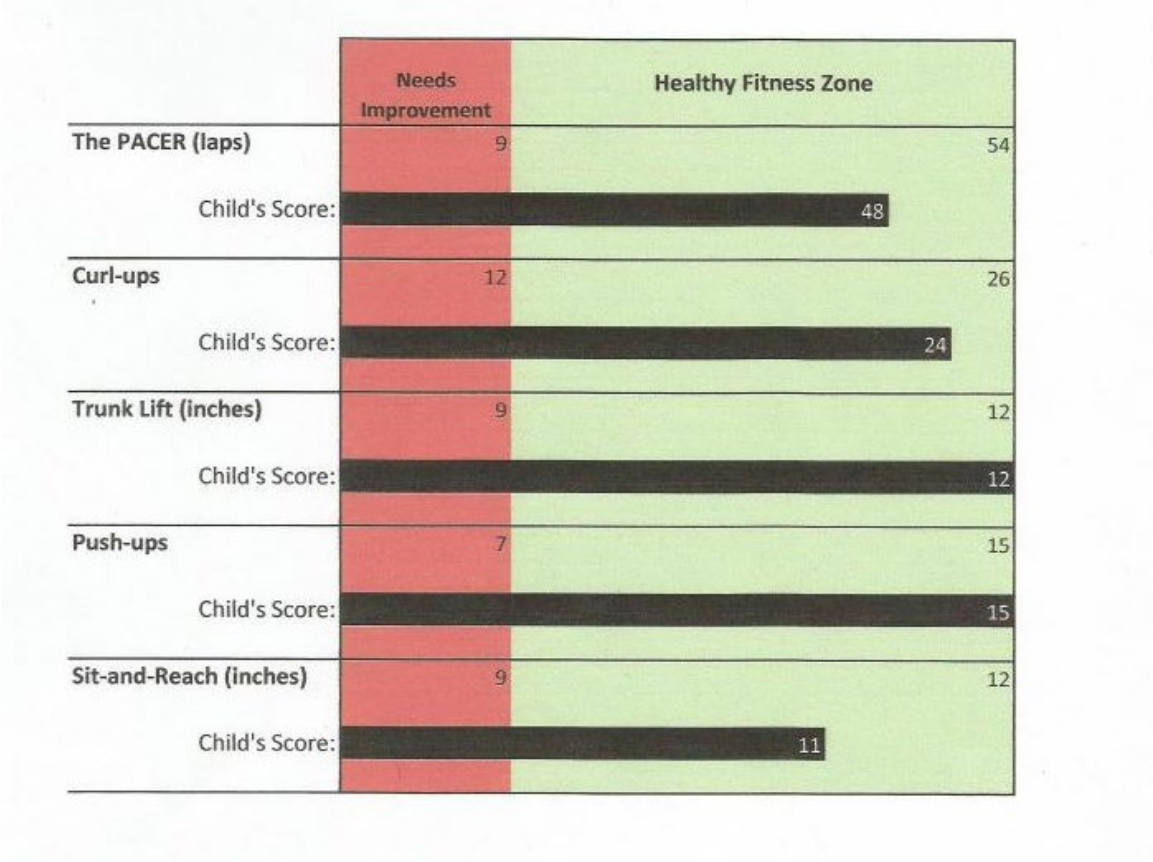
APPENDIX C

“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 D

"UNHEALTHY" 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

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BIOGRAPHICAL INFORMATION

Aria Green is an undergraduate psychology student who has been attending the University of Texas at Arlington since 2016. She has spent her time in college as a founding member of the UTA chapter of Active Minds, a student organization dedicated to mental health advocacy and serving as a UTA Counseling and Psychological Services ambassador and intern. She also works under Dr. Jensen-Campbell as a research assistant for various personality and social behavior studies. Off campus, Aria Green has worked at SafeHaven of Tarrant County as an advocate for victims of domestic violence in emergency shelters, and currently works for MHMR of Tarrant County as a START Resource Center Counselor, administering therapeutic programming for people struggling with intellectual and developmental disabilities.

Aria Green aspires to earn a doctorate degree in child psychology and become a licensed child psychologist, as well as advocate for mental health awareness and advocacy. Her research interests include developmental and clinical psychology, especially in helping children and adolescents who struggle with mental health, trauma, and examining how social and family relationships affect them.