12-2017

Effect of Vocal Prosody on Elementary Teachers' Perceptions of Black and White Students

Chynna Sierra McCall

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EFFECT OF VOCAL PROSODY ON ELEMENTARY
TEACHERS' PERCEPTIONS OF BLACK
AND WHITE STUDENTS

A Dissertation Submitted in Partial Fulfillment
of the Requirements of the Degree of
Doctor of Philosophy

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College of Education and Behavioral Sciences
Department of School Psychology

December 2017

This Dissertation by: Chynna Sierra McCall

Entitled: *Effect of Vocal Prosody on Elementary Teachers' Perceptions of Black and White Students*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in College of Education and Behavioral Sciences in Department of School Psychology

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ABSTRACT

McCall, Chynna Sierra. *Effect of Vocal Prosody on Elementary Teachers' Perceptions of Black and White Students.* Published Doctor of Philosophy dissertation, University of Northern Colorado, 2017.

There is an academic achievement gap between White and Black male students as evidenced by the significant difference between standardized test scores beginning in the third grade and continuing throughout secondary education. It has been postulated that this gap is influenced by differences in how teachers interact with students of color. This difference in treatment may stem from implicit racial stereotypes held by teaching staff. Many characteristics such as skin color or accent can serve as triggers for such stereotypes. One factor that has not been studied is vocal prosody, the melodic contour of one's speaking voice, and its ability to activate racial stereotypes. This study examined the degree to which vocal prosody might trigger stereotypes and thereby affect teacher's expectations of academic performance.

A group of volunteer teachers (n=104) were tasked with listening to a recording of either a Black or White student reading a passage aloud. Half the teachers were simultaneously shown a photo of a Black or White student corresponding to the race of the recorded student voice, while half only listened to their assigned recording with no visual image. They were then asked to select an academic profile (ranging from Advanced to Unsatisfactory) that would best fit their expectations of the student's academic achievement. Using this methodology, the goal of this study was to determine

whether differences in voice (i.e., White child or Black child) or voice and picture affected teacher's expectations of academic success.

The statistical analysis of group response patterns indicated that there were no statistically significant differences. That is, recordings of the Black student reading (with or without accompanying photograph) did not yield significantly different ratings of expected performance than those of the White student reading. Therefore, there is no indication that voice influences teacher expectation. Further study into the effects voice has on triggering racial bias, in or out of the classroom setting, is needed. Examination into how the age of a student influences racial cuing by the voice is also of importance to this field of study. Despite the lack of significant findings, this study highlights the need for awareness concerning how racial bias can be perceived as impacting the classroom environment.

ACKNOWLEDGMENTS

Even in the most difficult of challenges, you have those who provide you with light when you are in the shadows, shelter when you need to regroup, a map when you feel lost, and a firm push when you need to get back on your journey. Those people for me do not need to be explicitly acknowledged as they do not support me for the posterity, but for the love they have for me and the pride they have in seeing me excel. However, with all the work and time they have put in while I have been on this journey they need to be recognized. They are Alex C. Phelps, Spencer A. Lester, Audrey C. McCall, and Kenneth J. McCall.

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INTRODUCTION

Overview

It is a natural process to categorize people into distinguishable groups. Racial

categorization is a salient example of this thought process, and this categorization occurs

at varying levels: At the individual level, categorization allows one to differentiate people

from one another; at the large group (societal) level, this process results in racial

stereotyping (Macrae & Bodenhausen, 2000). Physical features that are common among

particular ethnic groups allow for the lumping of people with such features into a

collective whole. Conceptual understanding of a group (a category) is colored by

individual experience with members of that group (Macrae & Bodenhausen, 2000). These

personal interactions inform experiential understandings, which in turn allow for the non-

observable features – personality characteristics – of an individual to be assimilated to the

group. By merging the observable and non-observable features to create a category for a

specific racial group, a set of expectations are made of the people who match those

significant features (Hamilton, 1979).

Racial categorization and the resulting stereotypes are formed through cultural

heritage, where the ideas and understandings of others are passed down and

communicated through the generations through communication, observation and

imitation (Quadflieg & Macrae, 2011). The acquisition of stereotypes is reflective of the

biases, motivational needs and social learning mechanisms of the individual. These associations based upon the bias the individual has developed are reflective of the attributes that he or she has ascribed to a certain group even if there is no qualitative evidence that supports the associated attributes (Quadflieg & Macrae, 2011). Even though stereotypic beliefs are individually held, they are often shared culturally. Since there is this collective nature in stereotypic beliefs of others who do not belong to one's specific group, it is perceived as permission to express and act upon the biases that one holds of others (Quadflieg & Macrae, 2011). An individual person's biases toward others are influenced by their external environment, which formulates the basis for their accrued stereotypes.

The voice of an individual is likely also taken into account when ascribing a racial category to an individual; that is, the voice is one observable characteristic that could inform which category its owner belongs to. The literature suggests that the voice cues a preconceived notion of who the speaker is and his personality traits (Strongman & Woolsey, 1967). The vocal prosody (defined as the melodic contour, tone, pitch, and timbre) of an individual's speech is compared to the internalized expectations of a particular race's typical voice patterns and contrasted to a "standard voice". The degree to which a voice matches a race's expected typical voice likely triggers the expectation to what degree the speaker is going to match the preconceived personality characteristics for that racial group.

Racial categorization and the resulting inferences and expectations of an individual reflect unintentional stereotyping (implicit bias). Within the schools, teachers generate varied expectations of their students. As will be further discussed, the valence of

a teacher's expectations of a student can impact how a student is evaluated. This study is an evaluation of whether a student's voice is one variable that affects a teacher's expectations differently for Black or White students through an implicitly biased association that might unconsciously affect how they evaluate a student's academic abilities.

Background of the Problem

Racial bias among educators influences student outcomes (Tenenbaum & Ruck, 2007). This can be observed even among the highest achieving students who wish to attend college. Generally, Hispanic and Black students earn significantly lower GPAs in comparison to White and Asian students (Gándara, 2005). This gap is even seen at the Kindergarten level, as only 10% of Black students are in the highest reading quartile compared to 30% of White students and 38% of Asian students (Gándara, 2005). This disparity is likely suggestive of the racial expectations that teachers hold for their students. It has been demonstrated that teachers hold expectations of students that reflect the disproportionality of achievement between racial groups. Specifically, teachers tend to hold the highest expectations for Asian American students and hold more positive expectations for Caucasian students than for Hispanic or Black students (Tenenbaum & Ruck, 2007). These positive expectations of Asian and Caucasian students affect how teachers interact with the students (i.e., more positive and neutral speech patterns toward Asian and Caucasian students, higher degree of positive feedback, and lower number of negative referrals teachers made of these students). This disparity in both expectations and classroom interactions (i.e., inequitable classroom climate and limited educational opportunities) can contribute to the observed disparities in academic performance among

ethnic groups (Rosenthal & Jacobson, 1968; Tenenbuam & Ruck, 2007). This disparity can affect how a child perceives his or her educational experience, as well as his or her academic ability. These disparities in student-teacher interactions are more salient and occur to a higher degree in primary school than they do in high school (Hughes et al., 2008). Teacher-student interaction is a significant factor in the quality of education within the elementary classroom. Teacher-student interaction can affect a child's present and future academic performance and social adjustment in school (Hughes et al., 2008).

The expectations that teachers hold of their students is perceived and interpreted by students. Students who are part of a disenfranchised group (African American or Latino/a) indicate that they have experienced race-based differential treatment from their teacher (Fisher, Wallace, & Fenton, 2000; Rosenbloom & Way, 2004) at higher rates than their peers who belong to the non-disenfranchised groups (Asian or Caucasian) (Greene, Way, & Pahl, 2006). The differences in classroom climate for students of varying racial backgrounds may result in negative consequences for African American and Latino/a students' learning. They may receive fewer opportunities to participate in class and less positive feedback for their efforts in the classroom (Hughes et al., 2008). Children perceive this difference, as they have indicated that teachers provide more educational opportunities to students who are high achievers than they do to low-achieving students (Weinstein, Marshall, Brattesani, & Middlestadt, 1982; Weinstein & Middlestadt, 1979; Weinstein, Marshall, Sharp, & Botkin, 1987). Students also indicated that they believed that teachers gave more positive feedback and praise to high-achieving students than to low-achieving students (Tenenbaum & Ruck, 2007).

This continued inconsistency in educational attainment suggestive of the racial expectations of the abilities of students is concerning and warrants an examination of factors that might affect this disparity. The observed racial disparity can be the result of the racial bias teachers express implicitly through their expectations of minority students. This implicit bias can unconsciously affect the quality of instruction towards these students, resulting in inequitable educational experiences for minority students.

Statement of the Problem

Given the research suggesting that a child's race or ethnicity affects teachers' expectations, it is important to understand other characteristics that might also alter teacher perceptions. Specifically, there is a gap in the research literature on the degree to which vocal prosody perpetuates implicit racial bias. Further study of the degree to which vocal prosody can elicit implicit racial bias in teachers' expectations and evaluations of a student is needed. This will allow the influence a student's voice has on the teacher bias and variations in student-teacher interactions between minority and majority students.

Rationale for the Study

Facial and vocal race cues were assessed to determine the degree of impact each has on teachers' ratings of student work. An individual's perception of a voice elicits stereotypes through an association of expected characteristics based upon the prototypical voice for a group of people. Inferences and expectations are dependent upon the racial stereotypes a voice connotes and the degree to which the voice is similar to the expected voice. In the classroom, this process may affect how a student is regarded and instructed.

For example, a Black male student is in a class, and his appearance matches how the teacher expects a Black male to look; the teacher may then have a stronger

association of the stereotypical qualities of a Black male for this student. Unfortunately, too often the qualities ascribed to the student may have a negative valence, which impacts what is expected of the student academically and behaviorally. These negative inferences of the student may also impact how an instructor evaluates his work and what level of work he should be expected to complete. Continued instruction based upon expectations that are informed by stereotypical understandings of an individual can negatively affect the educational attainment of the student.

Perceptions impact expectations, and the direction of the expectations, either positive or negative, impact behavior. Within the classroom, this results in the teacher perceiving a feature of the child based upon the societal implications expected of these features. This process of association and expectation can affect how a student is regarded and instructed (Hughes et al., 2008). This association process can link more than just facial features to student ability expectations, but vocal prosodic features as well. For example, would a Black male with a prototypical Black male voice elicit stereotype-motivated behaviors and judgments to the same extent as seen with facial cuing? The degree to which the voice perpetuates these associations has yet to be determined, but the voice does carry with it categorical information. The study of whether aspects of voice elicit implicit bias expands our current theoretical knowledge of this potential relationship. Also, further exploration into how strongly the voice perpetuates stereotypic associations will also allow one to isolate how strongly the face perpetuates stereotypic associations.

Theoretical Framework

The guiding theory for this study was cognitive theory which focuses on mental processes and how these processes affect overt expression in behaviors (Whitley & Kite, 2006). The central hypothesis of cognitive theory is that people have an essential tendency to categorize people in an in group and out group manner. From this theoretical framework, stereotyping is a normal process that is used to reduce and simplify vast sensory input into distinct groups of information, and one assimilates certain characteristics as belonging to all or most members of a particular group (Whitley & Kite, 2006). It is a simpler, more efficient process to cluster multiple members of a group based upon a similar characteristic than to assess each individual separately. Based upon this framework, individuals are not condemned because of the stereotypes they hold because everyone is susceptible to the cognitive process of stereotyping. This cognitive process that results in stereotyping is instead a process that allows an individual to comprehend a plethora of information quickly and efficiently (Whitley & Kite, 2006).

It is a natural process to categorize people by defining features that distinguish them from oneself. This categorization based upon distinct, differing features occurs at varying levels. At the individual level, categorization allows one to differentiate individuals from others; at the large group (societal) level, this process results in racial stereotyping. An individual's stereotype knowledge reflects his or her familiarity with stereotypes of varying groups and its members. This stereotype knowledge is indicative of the societal understandings of a group (Whitley & Kite, 2006). Almost every individual in a society has knowledge of the stereotypes his or her society endorses (Devine & Elliot, 1995). However, the degree to which individuals in a society endorse a

stereotype varies. This variation is reflective of the individual's stereotype activation process (Kunda & Spencer, 2003). The stereotype activation process requires that an individual must first categorize a person based upon a characteristic that is associated with a stereotyped group. Then he or she can either mediate the stereotype through a motivated process to intervene in the endorsement of the stereotype, or automatically be influenced by the stereotype. If the individual's thought process is not mediated by his or her own goals, needs, or motivations to intervene in the automatic process of stereotype activation, the stereotype will be activated (Kunda & Spencer, 2003).

After a stereotype has been activated, it is then applied to the given situation and/or person in order to judge and evaluate that event or person (Kunda & Spencer, 2003). This process of categorization, stereotype activation, and application is an automatic process, and because of that, it occurs without the awareness of the individual (Bodenhausen, Macrae, & Sherman, 1999). The way that an individual categorizes is reflective of how a person internalizes information about another. The extent to which he or she activates and applies stereotypes betrays his or her thought processes regarding how such information should be utilized. That is, knowledge of a stereotype does not automatically lead to the activation of a stereotype, and the activation of a stereotype does not automatically lead to changes in behavior motivated by the stereotype (Whitley & Kite, 2006).

Purpose

Through an experimental quantitative research design, the influence of vocal prosody and skin color on teachers' evaluation of students' academic abilities was evaluated. The interaction of vocal prosody and skin color was evaluated to determine

whether there was an interaction between the voice and skin color that affected such evaluations. The sample included teachers who had ever held a teaching license for the elementary level within the state included in this study. The teachers selected for this study were purposefully chosen and randomly assigned to various experimental group conditions.

Research Questions and Hypotheses

The primary goal of this study was to determine the effects vocal prosody had on teacher expectations and the degree to which they affect teacher expectations. The following research questions were studied:

Q1 Is there a difference in teacher expectations based upon a student's vocal prosody alone between typical Black and White voices?

Q2 Is there a difference in teacher expectations based upon the voice and face information they receive?

Q3 Can the difference seen in how a teacher evaluates a student be attributed to implicit bias triggered by the voice and/or face?

Q4 What is the magnitude of the impact of the voice and the combination of the voice and face on teacher evaluations?

The educational achievement gap might be propagated by implicit racial bias towards Black students, and that this may be due to both skin color and prosody. Since there is limited information on both of these characteristics, this study used various combinations of face and voice to better understand how these might elicit implicit bias. The researcher hypothesized that if the face and voice belonged to the same racial group, that implicit bias would be indicated more strongly. It was also hypothesized that when holding a teacher's level of implicit bias constant, there would no longer be a significant difference in how teachers evaluated students based upon their voice and face.

Furthermore, it was hypothesized that the face would be a more important predictor of implicit bias than the voice, but that the voice would also be a significant predictor.

Limitations and Delimitations

The evaluation of implicit bias has no resoundingly agreed upon assessment for racial implicit bias which was a delimitation of this type of research. The research design of this study involved a measure of implicit bias that has not been validated. Because of this, it is a potential weakness of the study. However, the Implicit Association Test (IAT; Phelps et al., 2000) was used to help validate the research design. The IAT is among the only tests of implicit bias available to the public. Potential weaknesses of the IAT include that its score thresholds for "Moderately Biased" and other levels have not been validated, meaning these distinctions can viewed as arbitrary (Blanton et al., 2009). Its weaknesses are a limitation, but these data were valuable in assessing the relationship between the independent and dependent variables.

This study only evaluated implicit bias at the time of the study. This study also did not assess the participants' past experiences with Black and White students, which may affect how the teachers evaluated the students of varying ethnicities. Because bias is affected by past experiences an individual has with a certain group of individuals, individual history can affect how a teacher evaluates a student. This study was limited to only evaluating whether vocal prosody affected the presence of implicit bias and did not assess if there were any other factors influencing the presence of implicit bias for Black and White children. This study cannot be generalized to races and ethnicities outside of those studied.

Due to how this study was designed, this study was limited by the school district where the participants were drawn from, which can affect the generalizability of the findings. As a result, the findings of this study can only be generalized to districts that are comparable to the studied schools' student compositions. Also, because the design required each participant to participate in only one experimental condition and his or her performance in that experimental condition was assessed across groups, it did not allow for it to be determined what the within-group differences would be in regards to implicit racial bias being activated by the voice and skin color. That is, participants partook in a single experimental condition, so comparison was made across groups instead of within groups.

Knowing the bounds of this examination and despite these limitations, this researcher finds that the research questions of this study are of importance and merit investigation. In recognizing the above limitations, the following methodology was designed with the goal of most accurately identify existing trends within these bounds; the analysis of findings is similarly bound by these limitations. Avoiding over-generalizing this study's findings is of great concern to this author. Still, these questions merit examination.

<center>**Summary**</center>

Schools have strict policies against explicit racially biased behavior. The racially biased outcomes that affect a minority student are not driven through conscious awareness of categorical expectation nor the physical features of an individual, but through an unconscious thought process. The voice is a feature that can cue the unconscious prejudiced categorization process. The expectations a voice creates influence

how an individual will behave and interact with the speaker. It may be that vocal prosody

plays a role in the continuation of the achievement gap in America.

CHAPTER II

REVIEW OF LITERATURE

Introduction

In this chapter, the literature is reviewed. The scope of the literature is limited, due to the emergent stage of this research area; in many ways, this field is in its infancy. As such, multiple fields of study were drawn upon to inform the current understanding of the mechanism of stereotyping and bias, the results of bias in the classroom, and how the voice may be a trigger for stereotyping.

Social Categorization

The current understanding of how the world is perceived and how one behaves with others is deeply rooted in social categorization. The process of categorization allows for efficiency in the thinking process. An inestimable expanse of detail can be condensed into a single group (category) that allows for information pertaining to that group to be retrieved very quickly when a feature of that condensed group is presented. This allows for newly encountered information to be integrated to fit into an existing group (Quinn, 2002). This process is used to reduce the cognitive load that is necessary for making decisions. When applied to people, the categories that are formed through this process are termed *social groups*. Once groups are established, "people develop beliefs about the members of those groups…they then use these beliefs to guide their future interactions with individual social group members," (Whitley & Kite, 2006, p. 75). However, that is

not to say that simple categorization dictates interactions on a simplistic level. Nuance and interaction-specific detail also come into play when forming judgments.

Schemas, defined as the mental representations an individual has created concerning a particular social group or object, are an important concept in social cognitive categorization. Due to the fact that they are constructed based upon an individual's personal interactions with and beliefs about a social group, "[s]chemas influence what people pay attention to, how they organize information, and what they remember later," (Whitley & Kite, 2006, p. 75). Because of this, schemas are intimately related to stereotypes. That is, stereotypes are a category of schema in that they influence how people interact with others as guided by those mental models of social groups and their associated characteristics. Some stereotypes are based on the social constructs of race, as influenced by the color of one's skin among other features. Stereotypes include expectations of a racial group's behavior and ability (Quadflieg & Macrae, 2011).

Stereotype Activation and Application

The degree to which a stereotype is activated (i.e., brought to mind) is directly related to how closely an individual looks and acts like the predetermined typical representation of the individual's social group (Quadflieg & Macrae, 2011). That is, the more closely an individual resembles the prototypical member of a social group by appearance or action, the more likely another is to associate stereotypical expectations of that individual. The environment and context of a situation influence the stereotypes that will be activated, meaning stereotypes not related to the situation are not brought to mind, while those that are related are activated.

To illustrate these concepts, take for example two of the most commonly associated stereotypes of people of Asian descent: they are good at mathematics and bad at driving. The more an Asian individual resembles the prototypical Asian with regard to stature, facial features, and voice, the more strongly it will be assumed that he or she is good at math and bad a driving. However, if this individual is behind the wheel, the stereotype that he or she is a bad driver is specifically activated. In this case, the stereotype that he or she is good at math would not be activated because the environment does not dictate its necessity. Because categorization and stereotyping are cognitive processes to speed up decision-making, it is not beneficial in this context (driving) to make decisions about this individual's academic ability. As we can see, stereotypes are dependent on both the strength of social group identification and environmental context of a social interaction.

An individual's motivations can inhibit or facilitate stereotype activation (Blair, 2002; Kunda & Spencer, 2003). When the application of a stereotype can help an individual achieve or satisfy his or her goals, a stereotype is motivated into activation (Kunda & Spencer, 2003). However, when the application of a stereotype can interfere with the individual's goal, the individual is motivated to inhibit the stereotype from being activated (Blair, 2002). Both the motivational factors and situational influences can affect the activation of a stereotype (Fein & Spencer, 1997).

Again, examples provide some clarity here. As captain of a gym class basketball team, one might be motivated when looking at his choices to activate the stereotype that Black students are better at athletics, selecting on his team mostly Black students. Activating this stereotype is motivated by the team captain's desire to gain advantage

over the opposing team; to do this quickly, a stereotype related to athletics is useful. Conversely, if one was partnered with a Black peer for a student project, it would not be beneficial to activate the stereotype that Black people are lazy, and when dividing up group work, it would be unlikely that the group would assign the Black student less work. Therefore, this stereotype would not be activated, as it would not benefit the individual to take on more work to compensate.

Once a stereotype has been activated, it facilitates the application of a stereotype, however, as the stereotype can be inhibited from being applied (Fazio & Towles-Schwen, 1999). Stereotype application depends on changing one's behavior toward another based on stereotypic understanding of a given scenario (e.g., seating a Black student in the front of the classroom based on the stereotype that Black students are disruptive). To inhibit the application of a stereotype, the individual must be motivated and able to do so. Stereotype application will occur unless the individual is motived to inhibit the application of the stereotype (Whitley & Kite, 2006).

Automaticity and Implicit Race Bias

As stated, human beings categorize quickly and behave in response to those categorizations. These categorical understandings allow for people to operate efficiently during interactions as the use of categorization based upon social knowledge, beliefs, and expectations of social groups allows for insights about an individual to be made without the time-consuming process of discerning who the individual is (Quadflieg & Macrae, 2011). It is unrealistic to perceive the school and classroom environment to be free of these social processes. To examine the effect of implicit prejudice on the educational gap, an understanding of the nature of stereotyping is required.

Implicit prejudice (also known as implicit racial stereotyping) is the unconscious attitude an individual holds for a particular person or group. Amodio and Devine (2006) ran a study looking at what can be predicted from implicit stereotyping and evaluation. The implicit beliefs about the minority group – stereotyping – predicted the majority member expecting the minority group member to perform at the same level as is prescribed by racial stereotype. Therefore, implicit stereotyping is predictive of the judgment an individual formulates of another. The unawareness of the racial bias that results from these implicit processes is due to minimally-controlled cognitive processing and biasing cognitions (Amodio & Devine, 2006). Cognitive representations of an out-group, which are based upon the culturally-held beliefs about that out-group, are responsible for the implicit processes of racial bias (Amodio & Devine, 2006). Teachers, therefore, can formulate judgments of their students and their performance through a racially biased lens without being consciously aware of it.

Banaji, Harden, and Rothman (1993) examined implicit stereotyping through the use of scrambled sentences and reading passages that contained stereotypical behavioral descriptions. These instruments worked to represent an equivalent to the unconscious exposure to stereotyped information that is presented in day-to-day life. After reading the passages, participants were presented with images of different individuals and asked to give their impression of each individual. Through qualitative analysis of participants' responses, Banaji and colleagues concluded that the characteristics ascribed to the pictured individuals reflected the behavioral descriptions of social categories they were presented through the reading passages and scrambled sentences. The participants were primed through the passages and sentences to perceive certain categorizations in which

an individual would fit. These findings illustrate how very brief exposure to stereotypic information can give rise to implicit bias.

Racial stereotyping is an automatic process that can be regulated with proper motivation, but the stereotype is still automatically triggered in the unconscious by sensory stimuli in every individual (Cunningham, Van Bavel, Arbuckle, Packer, & Waggoner, 2012). When individuals were asked to focus on individual attributes and characteristics instead of social categories to make a personality judgment, they still employed racial stereotyping in the categorizations within 120 milliseconds of exposure to a face. This persists even when the individuals are asked not to focus on social categories or individual attributes (Cunningham et al., 2004). Cunningham and colleagues (2004) measured differences among the neural processing of faces by recording the event-related potential of individuals as a structural encoding process which was modulated through the presentation of faces of differing races. The study indicated that persons of all races more quickly recognize the faces of Black people than they do those of other races as indicated by a quicker peak in the event-related potential. This indicates that facial processing depends not only upon face structure, but also upon qualities of the face, including skin color (Cunningham et al., 2004). Therefore, race is quickly assessed, allowing for categorization and the activation of stereotypes.

Zarate, Stoever, MacLin, and Arms-Chavez (2008) designed a study utilizing a training phase and an experimental phase to address how person-based representations affect group-based perceptions. The participants, all of whom were Latino, initially viewed individuating information in the form of names, pictures, and short, nonstereotypic profiles of four African-American males and four Latino males during the

training phase. Upon the second viewing of the information, the participants were asked to form an impression of the presented individuals. The experimental phase involved a categorization task where a photo was presented either to the left or the right visual field, followed by a written description of a group label (*man*, *woman*, *Latino,* or *Black*). Participants were instructed to indicate whether the word and picture matched. During the experimental phase, the photos presented alternated between trained photos and new photos. The neurocognitive model of facial perception Zarate et al. (2008) utilized consists of the integration of the right and left hemispheres' representational abilities. The left hemisphere can bias an individual's perception of another through group categorization; familiar facial characteristics an individual shares with a social group can trigger a recollection of past experiences one has had with individuals of that social group. The right hemisphere formulates a social representation of an individual based upon use of facial experience. That is, the left hemisphere projects a representation of an individual based upon racial characteristics, whereas the right hemisphere creates a representation based on an individual's physical attributes, which resemble previously-encountered characteristics, projecting the qualities of those with similar features onto the new individual. In the study, participant reaction times were slower in the left cerebral hemisphere than in the right cerebral hemisphere when viewing images participants were exposed to in the training phase when the pictured individual differed from the participant in-group membership. These slower reaction times demonstrate the inhibition of group perception processes of out-group members due to the learning of nonstereotypic information about that individual. These findings suggest that a dual process occurs during person perception. Zarate et al. (2008) determined that the implicit

racial bias based upon unconscious automatic categorization could be altered by interrupting this unconscious process with a conscious awareness of the person as an individual, and not just a part of a greater social group. This awareness can interfere with the stereotypic association a person implicitly formulates of an individual, and with constant interference, the regulation of the stereotypic thinking becomes stronger.

Motivational Factors that Influence
Expression of Implicit Race Bias

Presumably not every teacher exhibits the same degree of implicit unconscious stereotyping of out-group students; some teachers are more adept in their ability to control automatic racially biased cognitions that can affect their student-teacher interactions. Amodio, Devine, and Harmon-Jones (2008) utilized the weapons identification task in which participants were primed to a Black or White face, then flashed an image of either a handgun or a hand tool and asked to indicate whether they saw a handgun or hand tool. The authors determined a motivationally-maintained process is needed to uphold awareness of racially-biased thoughts and inferences in order for the automatic racial bias to be controlled. This motivation is stimulated by internal and/or external factors for maintaining an egalitarian view of all individuals in order to control the prejudicial behaviors that are triggered through stereotypical social cues. Participants with internal factors performed with better control on stereotype-inhibition tasks were those who were motivated by either a combination of internal and external factors or those who were motivated solely by external factors. In accordance with the findings of Amodio et al. (2008), teachers may be motivated not to act in a biased fashion but issues arise when discrepancies in how they believe they are acting with students of the out-group and how they are actually interacting with students of the out-group exist.

It seems likely that the degree of the discrepancy in the awareness between what should be done and what is being done might be related to the high cognitive load involved in teaching, as well as the lack of time to fully deliberate the responses a teacher exhibits in the classroom. Therefore, the classroom would then provide environmental conditions that would inhibit the control of prejudice teachers are motivated to have. Cunningham et al. (2012) determined this understanding of the effect of cognitive load on one's ability to social categorize to be incorrect. In order to determine if different social categories can be modulated by motivational states, they examined the rapid responses to members of different social categories through a computer generated block design in which participants pulled (approached) or pushed (avoided) a joystick at the onset of blocks of three faces presented in succession. The research team determined social perception is flexible and sensitive to motivational frames of reference. As observed when people were encouraged to approach others, racial bias was attenuated in very early perceptual processing, whereas when people where encouraged to avoid others, the own-race bias increased, as observed in the increase of "pushing away" response to those of other races. These findings illustrate the influence motivation has on the automatic social perception and evaluation process.

The variability in overall regulatory abilities of educators is dependent upon how much external motivation the teacher has to maintain an egalitarian point of view. Amodio et al. (2008) found that individuals who had a high internal motivation and low external motivation were more effective at regulation than those who had high internal and high external motivations. Perhaps an explanation of this finding is that those with high internal and low external motivation act on their internal motivation more because

they feel some righteousness in their realization of the incorrectness of implicit biases and the actions they take to avoid those biases. Those with the high external *and* internal motivation, on the other hand, do not have that same level of righteousness, and controlling the prejudiced thoughts becomes less important to them, because others are simultaneously responsible for eliminating these biases; it becomes the responsibility of the external motivator to motivate them to maintain this control, which leads to less internal effort in controlling their implicit bias. Some are not as effective at regulating their implicit bias because they do not know when to utilize that prejudice control which results in the unintentional racial bias behavior. Amodio et al. (2008), speculate that this is due to how their internalized representations of egalitarian views of individuals represent at the neural level. An individual gains this neural representation through the conflict-monitoring process which regulates the unconscious before a response is made. The process overrides an individual's predispositions to act (their instinctive response), and favors how they want to act (the response they know to be ethically correct; Amodio et al., 2004).

The Classroom

The classroom is much more than the curriculum and instruction a teacher delivers; the educational experience of every student is dependent upon more than just facts his or her teacher presents. Classroom experiences and social interactions affect how well educational information is transmitted from teacher to student. Seemingly minor social nuances greatly affect the classroom environment and how well students learn and achieve (Tenenbaum & Ruck, 2007).

The classroom should be a warm and welcoming environment; however, for a child who is a minority group member, the classroom can become a hostile environment in which he or she no longer wants to be. This hostility is typically not overtly observed through conventional means, wherein it would be identified through verbal or physical actions (Sue et al., 2007). This hostility is known only to the student or group of racial minority students who feel uneasiness in the classroom. Unfortunately, the hostility the student feels is often due to superficial aspects of the student which prompt preconceived notions and expectations of the student (Sue et al., 2007). This hostile phenomenon has been deemed *racial microaggressions*, which "are brief and commonplace daily verbal, behavioral, or environmental indignities" that are often unconsciously and negatively directed towards minority racial groups (Sue et al., 2007, p. 271). These microaggressions are a reflection of the expectations the teacher holds of the student and his or her abilities.

Teachers, just as a vast majority of Americans, define themselves as good-natured, respectable, and decent human beings, with a firm belief and practice of equality and democracy in their everyday interactions. This understanding of the self makes it challenging for an individual to consider that he or she has biased racial attitudes and is capable of engaging in discriminatory behavior based upon those biased beliefs (Sue, 2004). Nonetheless, the unconscious automaticity of racial microaggressions is connected to neurological processes that regulate emotions that regard prejudice, and are conditioned through cultural habituation (Abelson, Dasgupta, Park, & Banaji, 1998). Due to this, racial microaggressions are theoretically possible whenever individuals interact with people of differing race and cultures (Sue et al., 2007).

In 2012, Marcia Caton authored a qualitative study of the perspectives of Black males on their educational experiences in high school and the discipline practices of their schools. One student's comment illustrated how out-group students perceive others' negative perceptions about them: "I often belonged to the 'low achievers' group. I did not feel that most teachers were supportive of me. It was difficult to change the teacher's perception of me because they focus more on my behavior issues, and therefore, it was hard to develop relationships with them" (Caton, 2012, p. 1068). This comment and many others presented in this study illustrate how the students of the out-group feel about their abilities and their perception of the bias their teachers show through the student-teacher interaction. A difference in how the teacher interacts with students of the out-groups and those of the in-group is clear to the students even though explicit acts of racial bias are not presented. These different interactions support the power implicit racial bias has over a student's educational experience. The racial bias that teachers exhibit unintentionally can affect how they instruct students, and this difference is perceived by the out-group students (Caton, 2012).

Self-Fulfilling Prophecy

The stereotypes an individual, person A, holds and endorses of another based upon a characteristic that individual shares with a stereotyped group, person B, affects person A's expectations of person B. The member of the stereotyped group, person B, can perceive the expectations held by person A through his or her, person B's, interpretations of the way person A's behavior demonstrates their held expectation of person B (Klien & Synder, 2003). Person A's stereotype-based expectations of person B lead to one of two types of behaviors that will elicit stereotype-confirming behavior in

person B: 1) Person A can engage in nonverbal behavior that betrays his expectation; this results in person B showing reciprocal behavior to person A, or, 2) Person B interacts with person A in the same manner in which person A interacted with person B. For example, if person A expects person B to be a hostile individual, person A's behavior can reflect that expectation through a lack of eye contact, avoidance, and other behaviors that indicate that person A does not want to be around or feels uncomfortable around person B. Person B's behavior will then reflect that as he or she will engage in the same manner as person A, which will cause person B not to feel comfortable in actively engaging with person A and engage cautiously with person A (Klien & Snyder, 2003).

Person A can also engage in information-gathering behavior, which can elicit confirming behavior in person B. With this behavioral response, person A gathers information that confirms his or her stereotyped expectations of person B. Person B engages in confirming behavior of the expectations set by person A by behaviorally confirming what person A is expecting by answering the questions, and providing person A with information that confirms person A's expectations or is ambiguous and allows person A to interpret the information in a biased manner (Neuberg, 1994; Trope & Thompson, 1997).

For example, a teacher holds the belief that Black male students are more disruptive in the classroom. In a mixed-race class, she expects a particular Black male to be a difficult member within the classroom environment. The Black male student then perceives that his teacher does not see him as a positive contributor to the classroom environment because his teacher does not call on him as much and he is seated by himself a vast majority of the time. The teacher's behaviors towards the student can cause the

student to either behave in the classroom in a way that is expected of a disruptive student (interrupting and getting out of his seat) or engaging in kind, avoiding and distancing himself from the teacher. If the student engages in these stereotype-confirming behaviors, the teacher then uses the student's behavior as supporting evidence of the stereotype she has applied to the student.

In order for a self-fulfilling prophecy to occur, the process requires collaboration between the stereotyped group member and the perceiving individual. As the perceiver endorses a stereotype and his or her behavior reflects his or her expectation of the stereotyped group member, the stereotyped group member then needs to engage in behaviors that confirm the perceiver's expectations or are too ambiguous and allow for the perceiver to interpret the information in a biased fashion (Klein & Snyder, 2003). Within the classroom environment this process requires the teacher to engage in biased behavior and the student to engage in behavior that confirms that biased perceptions held by the teacher.

The Pygmalion Effect

The *Pygmalion effect* is a term used to describe the phenomenon of how individuals will live up to or fulfill the expectations of them determined by an external figure. An individual will perform in the direction of the expectation of them (Chang, 2011). This effect was studied in the classroom. Teachers were told at the beginning of the year that the students were given a test which would assess their likelihood for blossoming intellectually that year. The students were randomly assigned to the blossoming group. As a result, a significant difference was seen in the gain in ability levels between the control and the blossoming groups; the students in the blossoming

group in gained 12 total IQ points, where the control group gained 8 total IQ points. Children in the younger grades were more impacted by the teacher's expectations than those in the older grades. Within the younger grades 19 percent of the control group gained 20 points, whereas 47 percent of the blooming group gained 20 points. (Chang, 2011; Rosenthal & Jacobson, 1968). In essence, if an instructor has a positive expectation of a student, the classroom environment is crafted so that the teacher provides the student with more learning opportunities, increased challenges, and frequent praise, all of which influence the student in a positive way. However, with negative expectations, the classroom environment changes drastically, and a disadvantageous learning environment is created which influences student's performance in a negative fashion (Chang, 2011). Some common instances where lower teacher expectations of students negatively affect the quality of instruction and classroom interaction might include giving students less wait-time to answer questions, giving the answers to questions rather than giving clues to help answer them, giving praise to students unrelated to academics, and criticizing students more often and harsher for their failures (Tenenbaum & Ruck, 2007).

Additionally, the way the classroom is organized and the small groups to which children are assigned depict the expectations teachers hold of the students. Groups receive varying resources to use and have differing qualities of student-teacher interactions (Anderson, 2009). For example, differing utilizations of classroom materials are used based upon the group the student is in; students in lower reading groups are often provided materials that are not as technologically advanced as higher reading level groups. Most often flashcards are used with lower reading groups, while the higher reading groups can use more independently the classroom technology, such as interactive

boards and computer programs (Anderson, 2009). This further differentiates the students from one another and makes it apparent what the teacher believes the students can do. Because minority students are not normally in the higher achieving groups (Gándara, 2005), the student-teacher interactions as described above for low-achieving groups become the norm for students of color. Studies have aimed to determine what facilitates this unfair behavior in educators. A teacher creates an environment that is more conducive to facilitating academic success if the teacher holds higher expectations of the student (Goldenberg, 1992). However, when a teacher does not believe a student will perform well, thus holding lower expectations of a student, the teacher may create a less friendly and engaging classroom environment (Tyler & Boelter, 2008); this does not promote academic success, but rather a disenfranchised learning environment based upon the teacher's expectations of his or her students.

Effect of School Composition

The amount of responsibility a teacher places on himself or herself for student learning is reflective of the expectations teachers have of their students (Lee & Smith, 2001). The expectations a teacher has of student abilities is reflective of the larger organizationally entrenched expectations and beliefs of student academic abilities based upon the student's background (Diamond, Randolph, & Spillane, 2004). The inextricable connection between the composition of the school and its student population and the school's mircopolitical views of students of varying backgrounds habituate how the teachers within the school then asses and interact with their students (Diamond et al., 2004). The larger organizational perceptions and appreciations of race and ethnicity and its relation to the abilities of students is conveyed to the teachers (Horvat & Antonio,

1999) and impacts how much responsibility a teacher has over student learning as well as his or her expectations of students from certain backgrounds (Diamond et al., 2004).

This organizational habitus and teacher expectations and dispositions that are present in the schools regarding racial differences among children are associated with the greater social perceptions and expectations of racial differences. The larger societal understandings of racial differences are due to the symbolic meanings that racial characteristics carry. The attached meaning racial characteristics carry are associated with the power struggle between the oppressor and the oppressed group members, as the symbolic meaning either legitimizes a group or devalues a group (Lewis, 2003). Stereotypic images and expectations of racial groups can influence how a teacher perceives a student's abilities due to his or her race (Diamond et al., 2004). A school's racial composition of the student body can influence the expressed dispositions of the teachers' and the school's collective sense of responsibility for student learning (Lee & Loeb, 2000). For example, schools with a high concentration of Black students may have a higher degree of teachers who hold lower expectations of African American students and hold a decreased amount of responsibility for their learning (Diamond et al., 2004), thus displacing the responsibility for the student's academic outcomes on the student, their family background, the student's level of motivation to learn, etc., rather than their success being a reflection of the teachers ability (or inability) to communicate the academic material effectively (Lee & Loeb, 2000).

Stereotype Impact on Evaluations of Stereotyped Group Members

Stereotypes can influence how an individual perceives a member of a stereotyped group as well as how he or she interacts with the member of the stereotyped group. When

an individual can trigger the activation of a group stereotype, the evaluation of the individual is affected by the group stereotype (Whitley & Kite, 2006). Stereotypes can lead to differential evaluations of the individuals who trigger group stereotypes. With regard to the evaluation of individuals who are a part of a stereotyped group that are believed to be less competent, the shifting standard model of stereotyping can be applied (Biernat, 2003; Biernat, Manis, & Nelson, 1991). Individuals who are a part of the "less competent" group are evaluated on a scale that shifts based upon the task being evaluated. The stereotype leads the evaluator to have lower expectations of the stereotyped group member. If the person of the stereotyped group does perform at the same level of members in other groups that level of performance is then seen better due to the lower standards the evaluator has of the stereotyped group (Whitley & Kite, 2006). This shift in standards can also influence the type of interactions and praise the stereotyped group receives. Members of the stereotyped groups are more likely to receive praise that is far more patronizing as they are praised for things that are seen as routine; these types of interactions send the message to the individual that he or she is less competent (Biernant, 2003).

Coding of the Face and Voice

Besides the face, there are many different aspects of the individual that affect how one is perceived by another. The question then becomes, if the perception of the face can trigger prejudice and stereotypes that affect behavior and evaluation of a minority group member (Cunningham et al., 2004), is this also true of the prosodic features of minority register and dialect?

The classroom is highly focused on language as a means of evaluation. The term *prosody* refers to the cadence, timbre, and emphasis an individual uses when speaking (Rao, 2010). This vocal quality – prosody – can be seen as influencing implicit bias as it may elicit racial stereotypes about vocal patterning, either supporting or contradicting minority stereotypes. Therefore, implicit bias brought about by racial cues in students' vocal qualities might be a contributing factor of the observed educational gap, as teachers hold racial expectations.

Presumably, the face and the voice are automatically integrated with one another in forming a perceptual identity of an encountered individual. The information from the face and voice are integrated together and processed together to form expectations (Stevenage, Hugill, & Lewis, 2012). This process is seen through the McGurk effect, where an individual sees a face mouthing /ba/ and hears the vocal production of /ga/, the individual perceives the face as producing /da/ or /tha/. The McGurk effect illustrates how the two features are distinct from one another but are integrated with one another to formulate a perception (McGurk & MacDonald, 1976).

To examine the integration of voice and facial recognition in person perception Stevenage, Hugill, and Lewis (2012) designed a study which systematically varied the priming stimulus (face or voice) and testing stimulus (voice or face, respectively) to determine how face and voice recognition integrate with one another. The authors determined both a within- and cross-modality process is involved in person recognition. The predominant identification process is within-modality as faces primed faces and voices primed voices. Cross-modality was determined as also influential, but a stronger connection in person identification was identified through the presentation of the face and

then a presentation of the voice, rather than having the voice presented initially and the face presented secondarily. These findings suggest there are two separate pathways for person identification, face and voice, but facial recognition is a stronger pathway regarding person recognition than vocal recognition. These findings make it clear that vocal recognition does occur in a similar manner to facial recognition, where voice can trigger recognition and enable the retrieval of identity-specific facts of an individual. Vocal recognition and perception is stronger in determining group identification than it is in determining who the person is. More specifically, the prosodic features of voice can be used for identification by assessing what speech community the voice is expected to belong to, what race or ethnicity it is expected to belong to, and what can be expected of that individual based upon this identifying group membership (Stevenage et al., 2012).

Expectations of a voice and how it should sound reflect the bias of group membership. Yiu, Murdoch, Hird, Lau, and Ho (2008) hypothesized different cultural and language backgrounds of the hearer would affect how an individual would rate voice qualities of other languages – when analyzing the qualities of a voice from a different culture than theirs, participants would be less harsh than they would on those that matched their own. However, the authors found more negative critiques of voices from a different culture than that of the participant. The distinctions of what prosodic features belong to what group is reflective of differing cultural and racial groups. The distinctions become clearer to the perceiver when the speaker is from a differing group. This shows that people can identify different cultural groups through the voice and that stereotypes of these cultural groups can be applied to the speakers.

The voice is encoded in reference to the hearer's prototypical average voice similarly to the how the face is encoded in reference to the average/prototypical face (Leopold, O'Toole, Vetter, & Blanz, 2001). When an individual was exposed to the anti-face (a face with the opposite characteristics of the original face) and it was shifted towards the average face (a morphed face in-between the original face and the anti-face), an increased sensitivity to the original face was observed and a new identity for the average face was created in accordance to the trajectory of the facial morphing. This effect indicates that the average face becomes the prototype in which the observed face is compared to and further defined and interpreted (Leopold et al., 2001). Similar effects were seen when the participants were exposed to gendered voice which morphed into an androgynous voice. An increased sensitivity to the gendered voice was observed, and a new identity for the androgynous voice was created in accordance to the trajectory of the vocal morphing. This effect indicates that the androgynous voice becomes the prototype to which the first voice is compared and further defined and interpreted. These findings demonstrate that the experience of voice can impact the formation of perceptual identity (Schweinberger et al., 2008).

The activation levels in the inferior frontal cortex further support this understanding of the development of speaker identity. There is higher activation in the bilateral inferior frontal cortex (IFC) when unfamiliar voices are presented to individuals than for familiar voices. The IFC is involved in vocal perception identity formation (Latinus, Crabbe, & Belin, 2009), as the unfamiliar voice is compared to the average in order for an identity to be developed for the newly experienced voice. Part of this identity is related to racial categorization.

The voice with or without the input of visual features impacts how an individual perceives the speaker. These perceptions reflect the identifying categories in which an individual is placed; when classifying without direct contact and understanding of an individual the categories reflect stereotypes. Strongman and Woosley (1967) documented this stereotyping classification as participants attributed personality characteristics to varying dialects; the categorizations and associations were reflective of the greater societal stereotypes of those regional area speakers. The degree to which the heard voice matches the racial prototypical voice precipitates the degree to which the speaker is expected to match the preconceived personality characteristics for that racial group. Racial categorization and the resulting inferences and expectations of the individual reflect unintentional stereotyping (Strongman & Woosley, 1967).

The voice carries many sources of information. The voice conveys to the hearer three different categories of information: semantic, affective, and identity. The resulting effect derived from this amalgamation of information is the creation of the *auditory face* of the speaker (Belin et al., 2011). This auditory face provides the hearer, in this case the teacher, with information about the speaker, which then becomes categorized by the hearer in these different areas of information. The patterning of pronunciation is classified as identifying information as these patterns are interpreted as accents and dialects (Belin et al., 2011).

African American English Prosody
and Perception of Race

African American English (AAE) is a systematic and rule-governed variation of American English. It is most frequently spoken by African Americans who have been socialized culturally and linguistically in communities where AAE is spoken (Morgan,

1998). Even though AAE has been widely studied, the prosodic features of AAE and how an individual uses variations in prosody to develop and form ethnic identity are not well understood, but it is perceived that prosody is a central characteristic of the speech pattern (Thomas, 2007; Wolfram & Thomas, 2002). Rickford (1977) found with 86% accuracy that people could identify the racial identity of either an African American or European American voice, indicating that there is a perceptual difference of the prosodic features of Standard American English (SAE) and African American English (AAE). The respondents in Rickford's study indicated that they were able to discern a difference between White and Black voices because of variations in inflection, pitch, rhythm, tone, and intonation. Thomas and Reaser (2004) have also established that prosody provides the hearer with cues to the racial identity of the speaker, when White speakers of SAE and Black speakers of AAE are compared to one another. This perceptual difference in prosody that a hearer can identify has been identified even among Black speakers who do not utilize the morphosyntactic or pronunciation features that are characteristic of AAE and speak with English's standard grammar (Smitherman, 2000).

The degree to which a person's vocal prosody matches the prototype of the social categorization of that group's speech community impacts the degree to which a stereotype can be activated (Livingston & Brewer, 2002). The higher prototypicality an individual has of a characteristic, like vocal prosody, the quicker and easier it is for another to apply stereotypes to that individual (Whitley & Kite, 2006).

Voice and Teacher Expectations

When there is a considerable difference between school language and the home language in which a student favors the home language in the school setting, the line

between linguistic fact, which emphasizes correct grammar and pronunciation, and social prejudice can become blurred. The beliefs and educational values of what language should sound like influence how a student is perceived, especially if the student does not speak in a way consistent with school language (DeStefano & Rentel, 1975). Teachers can therefore disregard the cultural diversity of students and regard the use of culturally derived language differences as incorrect and indicators of lower language achievement. These interpretations are not necessarily based upon clear assessments of the students' abilities but rather upon prejudice.

James (1976) determined that Black students can perceive the content and stylistic/prosodic differences between African American English (AAE) and Standard American English (SAE). It has been shown that Black students prefer in the school setting to use only the AAE stylistic features, but will use both the content and stylistic features outside of the school setting. To clarify, students used the same melodic contour and structuring but did not use the AAE vocabulary in school. In this particular study, this shift in speech was observed only in second-grade Black students; thus it is inconclusive if the shift was due to the young students not entirely comprehending the "appropriateness" of using AAE content, as these students did not change the prosodic features of their speech to a more "appropriate" register. The use of the AAE prosodic features allowed the students to adhere to their cultural identity and not sound "White" (James, 1976). However, it is much more plausible that Black students, even students in the second grade, can and do deduce the perceptions their teachers have of AAE and what its use says about them. The use of AAE prosodic features is reflective of a Black student's need to identify with his or her culture; however, the expectations of them

remain lowered because of the perceptions of the sound of AAE, even when content is shifted towards SAE. It is plausible that at some level the students are also aware of this lowered expectation of them and their academic performance reflects that.

Summary

Stereotyping and engaging in biased behavior is a natural cognitive process. The degree to which we an individual's behavior is biased racially is dependent upon how he or she has created categories and expectations of others that are different from them and their motivation to impede biased behaviors. Since engaging in biased behaviors is such a natural process and is present within social environments, it is likely that the classroom environment where biased behaviors towards racial minorities, Black students. The biased behaviors in classrooms can take the form in variations in teacher student relations and teacher evaluations and expectations with students of differing racial backgrounds. The connections between bias and physical cues of race such as the face have been thoroughly researched. However, the connections between biased behaviors and vocal prosody have not been researched. An argument of analogy has been made for the connection between bias and vocal prosody has been made, where the voice is theorized that it cues biased behaviors in a similar manner to the face. Further research is needed in order to determine if vocal prosody elicits bias, and if this bias can be seen in the classroom environment.

CHAPTER III

METHODOLOGY

Introduction

This chapter describes the methodology for this study. Because this study was designed to fill a void in the literature concerning the impact of vocal prosody on bias, aspects of the design were novel. This study explored whether a connection existed between implicit bias triggered by the voice of a student and how this bias might have impacted teacher expectations. Data were collected between June 2016 and May 2017.

Design

The research design that was used in this study was experimental. As the purpose of the study was to determine the effect of manipulated independent variables (Voice and Face), and the study did not utilize a set of criteria within an intact group to select participants, the appropriate design was experimental. More specifically, the design was a posttest-only experimental design with nonequivalent groups. Each group of teachers received nonequivalent treatment conditions, but the groups were compared to each other in order to assess variation between the groups. Participants completed a test to evaluate their levels of implicit racial bias, and these levels were compared to how they performed in the treatment condition. This comparison was conducted to help determine the link between implicit bias and bias triggered by vocal prosody. That is, if a teacher scored as implicitly biased against Black students on the Implicit Association Test (IAT) and

evaluated a Black voice and/or face as low-achieving, it was considered likely that the down-grading of this student was motivated by teacher bias.

This research design utilized two methods of measuring bias, the experimental conditions and the IAT, to validate the result. However, the results could become limited if participants became aware of the purpose of the study and responded in socially desirable ways (Whitley & Kite, 2006). The IAT utilized the implicit cognitive technique to assess bias. This technique assessed bias without the conscious awareness of the participant, which allowed for an uncontrolled response to be obtained from the participant (Whitley & Kite, 2006). In conjunction with one another these two measures of bias allowed for response patterns to be better explained within the contrived classroom setting and allowed for more valid generalizations concerning bias and the voice and face.

Participants

Oral language fluency is consistently utilized in elementary education to assess a student's reading ability. It is also a common belief that oral language fluency is an indicator of a student's overall academic ability. The basis of the causal relationship is that achievement is dependent upon a student's ability to express what he knows clearly and in an accepted form (Chard, Vaughn, & Tyler, 2002; Gray, Saski, McEntire, & Larsen, 1980). However, this cause and effect relationship has not been proven (Gray et al., 1980). Presently, oral language fluency and this causal relationship is seen when assumptions are made of English Language Learners. Teachers are instructed in best practices to enhance and assess the oral language fluency of students, especially those who do not speak in a manner that is consistent with what is deemed satisfactory English.

It was hypothesized that children who do not speak in a manner consistent with satisfactory English (i.e., AAE) will also be judged using an assumed causal relationship of oral language fluency and academic ability.

Teachers who instruct classes at the elementary level have the most experience with assessing and judging a student's academic abilities based upon his oral language fluency. Having participants assess reading fluency exposed them to the vocal prosodic features of the student's voice. Therefore, kindergarten through fifth-grade teachers were the target population for this study. The teachers included in the study were those who had been working for a metropolitan area school district for at least 1 year.

The research review boards for two different school boards were contacted and permission was given for the researcher to contact teachers in person regarding their willingness to participate in this study. School principals and teacher leaders at various schools in these districts were asked whether they believed their teacher population would be interested in participating in the study. If the contact person indicated a high level of interest, individual participants from these schools were recruited. All teachers at these schools were asked whether they would like to volunteer to participate in the study. The teachers were also informed that they would be entered into a drawing for one of four $25 gift cards. The study was incentivized to increase the probability that the study sample consisted of both internally motivated and externally motivated individuals.

One participating school district, District A, is located in a large metropolitan area in the Western United States and at the time of the study, served around 7,500 students. Hispanic students comprised the vast majority of the student population, while 12% were White, and 2.6% Black or African American. For more than half, English was not their

first language. A vast majority (more than 80%) of students qualified for the free and reduced lunch program. District B is located within the same metropolitan area and served more than 90,000 students at the time of study. The student population was made up of slightly more than 50% Hispanic, about 25% White, and about 12% were Black or African American. Similar to District A, a majority (about 70%) of students qualified for the free and reduced lunch program.

District A employed 385 teachers, of which 77.1% were White, 16.4% Hispanic, 2.6% Black, and 2.3% split among other categories; 1.6% identified as two or more races. District B employed 5,965 teachers, of which 74.4% were White, 16.7% Hispanic, 4.2% Black, and 2.9% split among other categories; 2.7% identified as two or more races. Although one district was much larger than the other, they were similar in many key aspects including the diversity of their student population, the socioeconomic status of students, and teacher demographics.

A priori sample size determination for a large effect at 0.5 and a level of power at 0.95 yielded a sample of 26 participants per treatment group. Therefore, a total sample of 104 participants was recruited and participated in this study.

Instrumentation

Photographs

The use of the photographs was intended to assess whether the classification of ability was affected by the cueing of race by the face. The images were of 1) a third- or fourth-grade appearing, Black, male student; and 2) a third- or fourth-grade appearing, White, male student. The images were front-facing images obtained from stock photography websites.

Through a focus group of 10 volunteers unrelated to the study population, potential photographs were assessed to control for attractiveness and racial features. The focus group consisted of five White participants and five Black participants. Of the 10 focus group participants, seven were in the age range of 24-29 years, one was in the age range of 30-40 years, and the remaining two in the 41-50 years age range. The focus group included four males and six females. The focus group participants completed a survey indicating on a 1 to 10 ascending scale how attractive the pictured child appeared; images that ranked toward the middle of this scale were selected for use. Likewise, focus group participants were asked to determine how White or Black the pictured child appeared, indicating if the child does not look Caucasian (1), might be Caucasian (2), or is Caucasian (3) and if the child does not look Black (1), might be Black (2), or is Black (3); images ranked more definitely Caucasian or more definitely Black were selected for the study. Only male students were used in the portfolios to more definitely relate findings to race and to control for gender bias. Table 1 reflects the results of these focus group ratings.

Table 1

Average Attractiveness and Racial Conformity of Focus Grouped Images

Black Photographs		White Photographs	
Characteristic	Mean	Characteristic	Mean
Image 1		Image 1	
Attractiveness	7.4	Attractiveness	6.3
Blackness	2.8	Whiteness	3
Image 2		Image 2	
Attractiveness	6.4	Attractiveness	5.5
Blackness	2.9	Whiteness	2.9
Image 3		Image 3	
Attractiveness	6.2	Attractiveness	5.4
Blackness	2.9	Whiteness	2.9
Image 4		**Image 4**	
Attractiveness	6.2	Attractiveness	4.9
Blackness	3	Whiteness	3
Image 5		Image 5	
Attractiveness	6.7	Attractiveness	6.7
Blackness	2.6	Whiteness	2.9
Image 6		Image 6	
Attractiveness	7.3	Attractiveness	5
Blackness	3	Whiteness	2.8
Image 7		Image 7	
Attractiveness	7.3	Attractiveness	4.2
Blackness	3	Whiteness	2.9
Image 8		Image 8	
Attractiveness	7.1	Attractiveness	5.5
Blackness	3	Whiteness	2.6
Image 9		Image 9	
Attractiveness	5.6	Attractiveness	5.2
Blackness	3	Whiteness	2.8
Image 10		Image 10	
Attractiveness	6.3	Attractiveness	4.4
Blackness	3	Whiteness	3

Note. Bolded image numbers represent those images chosen for inclusion in the study.

After ratings for attractiveness and either Blackness or Whiteness were obtained from focus group members, the average ratings for each image were calculated (Table 1). From these averages, the most mid-range attractive images (closest to 5 out of 10) were chosen from among those images judged 3 out of 3 on the Whiteness or Blackness scale. Image 9 from the Black student images was chosen (Figure 1), and Image 4 was chosen from the White student images (Figure 2). Appendix A includes all images as presented to focus group participants.

Figure 1. Image of Black Student as Chosen by Focus Group (Image 9).

Figure 2. Image of White Student as Chosen by Focus Group (Image 4).

Voice Samples

The voice samples were made of 1) a third- or fourth-grade, prepubescent Black, male student; and 2) a third- or fourth-grade, prepubescent White, male student. Both

students read the same reading passage aloud. In creating voice samples for the focus group, participants were solicited from among the researcher's friends and colleagues from outside of the participating school districts. The White student was to use the register of Standard American English while reading. The Black student was to use a register of African American English while reading. To better ensure that the register of Standard American English or African American English were chosen to be recorded, each student was asked to start the recording stating their favorite color, favorite number, and favorite thing to do after school. This statement was performed in their natural register and were not impacted by the academic language in the reading passages. The varying vocal registers were intended to allow for bias to be elicited. To ensure the students performed similarly in their oral reading skills, each student recording was administered the Gray Oral Reading Test, fifth edition. The two students' voice samples selected from those who recorded voice samples were those that performed within the average range for a third- or fourth-grade student and sounded the most like his racial identity. These objective reading test scores are noted in Table 2.

Table 2

Student Gray Oral Reading Test, 5th Edition Scores for Reading Fluency

Black Voice		White Voice	
Fluency Score	Descriptive Term	Fluency Score	Descriptive Term
Recording 1		Recording 1	
8	Average	18	Very Superior
Recording 2		Recording 2	
8	Average	19	Very Superior
		Recording 3	
		8	Average
		Recording 4	
		16	Superior

Note. Bolded recording numbers represent those recordings chosen for inclusion in the study.

To determine the voice samples that sounded the most like his racial identity, the same focus group discussed above was tasked to rate how much each voice sample sounded like a White or Black child. The focus group participants were asked to determine how White or Black the recordings sounded, indicating if the child does not sound Caucasian (1), might sound Caucasian (2), or does sound Caucasian (3) and if the child does not sound Black (1), might sound Black (2), or does sound Black (3); recordings ranked more definitely Caucasian or more definitely Black were to be selected for the study.

After average Whiteness and Blackness was calculated from the focus group ratings (Table 3), voice recordings were selected with preference paid to selecting those rated as most racially identifiable (Blackness or Whiteness rating nearest to 3 out of 3).

Black student recording 2 and White student recording 3 were chosen with this criterion in mind. Both of these recordings were classified as *Average* on the GORT-5 assessment tool (see Table 2).

Table 3

Average Racial Conformity of Focus Grouped Voice Recordings

Black Voice		White Voice	
Characteristics	Mean	Characteristics	Mean
Recording 1		Recording 1	
Blackness	2.1	Whiteness	2.5
Recording 2		Recording 2	
Blackness	2.9	Whiteness	2.3
		Recording 3	
		Whiteness	2.8
		Recording 4	
		Whiteness	2.1

Note. Bolded recording numbers represent those recordings chosen for inclusion in the study.

Academic Profiles

Four academic profiles were created for study participants to match with the voice recording presented (with or without accompanying image). These profiles included a report card of grades earned in various subjects using a scale of Unsatisfactory to Advanced. For the purpose of statistical analysis, the profiles were assigned a numerical value on a scale of 1 to 4 (1-Unsatifactory, 2-Partially Proficient, 3- Proficient, 4- Advanced). Teachers in each condition were asked to select the profile that best fit the student they heard reading. Appendix D includes these academic profiles in their entirety.

Implicit Association Test

An Implicit Association Test (IAT; Greenwald, McGhee & Schwartz, 1998; Phelps et al., 2000) measures the differential associations between two concepts with an attribute through a dual categorization process. Through this dual categorization process, the IAT allows for one to know the degree to which an individual automatically associates a social group with a positive or negative evaluation. During the task the participant was asked to indicate and categorize whether the viewed face was either White or Black. The participant was also asked to indicate whether the viewed words were of a positive or negative nature. The IAT derives the degree to which an individual is biased towards one group or another is based upon the latent responses the individual has towards the pairing of Black+good/White+bad and Black+bad/White+good (Phelps et al., 2000). The Harvard Race ('Black - White') IAT was used in this study. This IAT consists of categorizing words that are either pleasant or unpleasant and faces of Black and White people. This IAT is located at the website http://implicit.harvard.edu/. The IAT was scored using the algorithm designed to determine level of bias. The IAT outputs one of the following levels of bias: Strong preference for White; Moderate preference for White; slight preference for White; no preference; slight preference for Black; Moderate preference for Black; or Strong preference for Black people. Each of these levels were coded for the purposes for the discriminant analysis as follows: Strong preference for White (1), Moderate preference for White (2), Slight preference for White (3), no preference (4), slight preference for Black (5) Moderate preference for Black (6)or Strong preference for Black (7). The IAT was chosen because it has been widely used in the implicit bias literature (Greenwald et al., 1998; Greenwald, Nosek, & Benaji, 2003;

Phelps et al., 2000). The reliability of the test is variable depending on the sample to which it is applied.

Group Structure

Four distinct group conditions were created for this study (see Table 4). Participants ($n = 104$) were randomly assigned to one of four group conditions as follows (26 participants to each group):

Group One

The participant was presented the four different academic portfolios ranging from Unsatisfactory to Advanced academic performance (as described above) as well as the voice sample from the White student. The teacher was instructed to indicate which academic profile they believed best represented the ability levels of the recorded student. Participants were instructed not to assign the profile based on one academic subject, but rather their interpretation of the student's overall academic ability.

Group Two

The participant was presented the four different academic portfolios ranging from Unsatisfactory to Advanced academic performance as well as the voice sample from the Black student. The teacher was instructed to indicate which academic profile best represented the ability levels of the recorded student. Participants were not instructed to assign the profile based on one subject, but rather their interpretation of the student's overall academic ability.

Group Three

The participant was presented the four different academic portfolios ranging from Unsatisfactory to Advanced academic performance, the voice sample from the White

student as well as the picture of the White student. The teacher was instructed to indicate which academic profile best represented the ability levels of the student whose voice sample they have heard and picture they have seen. Participants were not instructed to assign the profile based on one subject, but rather their interpretation of the student's overall academic ability.

Group Four

The participant was presented the different academic portfolios ranging from Unsatisfactory to Advanced academic performance, the voice sample from the Black student as well as the picture of the Black student. The teacher was instructed to indicate which academic profile best represented the ability level of the student whose voice sample they had heard and picture they had seen. Participants were not instructed to assign the profile based on one subject, but rather their interpretation of the student's overall academic ability.

Table 4

Participant Group Numbers and Associated Conditions

Group One ($n = 26$)		Group Two ($n = 26$)	
Voice Sample	White Student	Voice Sample	Black Student
Group Three ($n = 26$)		Group Four ($n = 26$)	
Voice Sample	White Student	Voice Sample	Black Student
Photograph	White Student	Photograph	Black Student

Procedure

With approval from the University of Northern Colorado Institutional Review Board received, the recruitment of participants began. Once the participants indicated their interest in volunteering for the study, they were asked to review and sign the

informed consent form prior to participation in this study. At that time the teacher-participants were presented with deceptive information about the true purpose of the study. The participants were told the study was intended to determine how well oral reading fluency is able to predict a student's overall academic ability.

The teachers were randomly assigned to one of the above listed four groups using a random number generator. The teachers were not informed of the other participants or to which group they were randomly assigned. Participants were individually contacted to schedule a time to meet with the researcher in their own classrooms for a maximum of 30 minutes. During the scheduled time, the teacher completed the study tasks.

The teachers were told instructions akin to the following: You will be listening to a student read a passage aloud. After you listen to the recording, use your intuition and experience to choose the academic profile that best fits the recorded student. The academic profiles consist of information regarding a student's reading level, math, and writing abilities. After you have made a selection that you feel best fits the student's academic ability, you will be completing a separate test that you will complete on the computer.

After reading these instructions, teacher-participants were provided paper copies of the four academic profiles to review. If the participant's assigned group conditions included a photograph, this was provided at a later time; that is, the academic profiles were provided during explanation of the task without a photograph. Participants were given the opportunity to ask questions to clarify their task after instructions and profiles were presented.

When the participant indicated he or she was ready, the voice recording assigned to their group condition was played from the researcher's laptop. These recordings were imbedded on a single PowerPoint presentation, the variable aspects of the different condition groups on their own slide. That is, group one contained only the voice recording of the White student, whereas group four's slide contained the selected image in addition to the voice recording of the Black student. Care was taken to prevent participants from seeing that other voice recordings and/or images existed by opening this PowerPoint document out of their line of sight. After opening the appropriate slide in full screen view, the laptop was turned around into the open view of the participant, exposing him or her for the first time to any image that might be associated with his or her assigned group condition. The assigned audio recording was played for the participant.

Opportunity to replay the voice recording was offered to each participant. After hearing the recording, participants were asked to select the academic profile they believed best matched what they perceived as the recorded student's likely academic achievement. This selection was noted for each participant.

After matching the voice (with or without photo) to the academic profile, the participant was instructed to complete the implicit bias test. Again, the researcher's laptop was used to administer this test. Instructions on how to perform the IAT were provided to the participant on the laptop via the IAT website. It was decided to have participants perform the steps in this order (i.e., selecting academic profile and then performing IAT testing) as having participants perform these assessments in the reverse order might have clued them in to the real aim of the study and thus bias their responses to appear more socially desirable by purposefully expressing less bias.

After completing the study tasks, each participant was then asked to provide demographic information, including race, age, level of experience, school district, and whether they were a special education or general education teacher. Participants were then debriefed. During debriefing, the participants were informed about the true nature of the study, assured the confidentiality of the results, and given contact information for the UNCO Psychological Services Center if they wanted to discuss any difficult feelings aroused by this study. Of note, none of the participants withdrew their data as offered, nor did any decide to seek further counseling. Likewise, none expressed a significant level of distress as a result of the use of deception to this researcher. Several did feel the need to justify their responses and IAT results to the researcher, dismissing the role of racism and bias in these outcomes.

Data Analysis

The researcher double-verified all run statistics to ensure accuracy and completeness. As there were two independent variables - voice and face - a one-way between-groups analysis of variance (ANOVA) was implemented to analyze the main effects on the dependent variable - academic expectations. The central aim of this study was to determine the effects of the voice on teacher expectations. The face was included in half of the group conditions to examine the current theory that the face affects implicit bias; it was a secondary aim of this study to elicit the degree to which the two variables influenced teacher expectations either individually or in combination. The one-way ANOVA was used to assess the following research questions: Research question Q1 (Is there a difference in teacher expectations based upon a student's vocal prosody alone

between typical Black and white voices?), and research question Q2 (Is there a difference in teacher expectations based upon the voice and face information they receive?).

To make sure that the conclusions that were being drawn from the ANOVA are valid, certain assumptions of ANOVA must be met. To test the assumptions the following steps were taken in order to diagnose the fit of the model. In regards to satisfying the assumptions for ANOVA, because there existed an equal sample size across groups, this ANOVA is very robust against any violations of assumptions; particularly, since the number of participants in the groups was equal, this greatly impacts how robust the ANOVA will be in regards to the assumption of normality. In order to satisfy as many of the assumptions as possible for ANOVA, the outcome variable (which academic profile a given student is assigned) was measured using a continuous scale. Each of the scores was equidistant from one another through the use of a grading scale from 1 to 4. Because my participants were randomly assigned to groups, this satisfied the assumption of independence and randomness of errors. The assumption of homogeneity was not violated and there was no need to re-randomize the groups. If significant relationships were to be determined further assessments of how well the ANOVA satisfied the assumptions would have been conducted.

The IAT provides information concerning a confounding variable, the level of implicit bias. In order to have a clearer understanding of the effects of independent variables on the dependent variable across the groups, an ANCOVA was performed. The ANCOVA allows for it to be known if the differences in the means across the groups in student evaluation are significant even after controlling for the varying levels of implicit bias (Harlow & Duerr, 2013). The ANCOVA procedure was used to further validate the

findings of the ANOVA if significant differences are found between the groups; if no

significant difference is found when running this procedure, it further supports the

findings of bias indicated through the ANOVA. The ANCOVA allows for a comparison

of differences across the groups based on the presence of implicit bias triggered by the

voice and/or face. Therefore, the ANCOVA analysis was used to answer research

question Q3 (Can the difference seen in how a teacher evaluates a student be attributed to

implicit bias triggered by the voice and/or face?).

Assumptions for the ANOVA and ANCOVA are similar and therefore no

additional testing of assumptions was needed for this component. If the findings of the

ANCOVA had been found to be significant, further testing of these three assumptions

would have been performed.

To determine the magnitude of the predictor variables – voice, face, and bias – a

linear regression model was generated. This procedure was used to answer the final

research questions (Q4, What is the magnitude of the impact of the voice, the face, and

the combination of the voice and face on teacher evaluations?). The independent

variables were coded with 1 for White (face or voice) and 0 for Black (face or voice). The

dependent variable (selected academic profile) was coded with the following pattern:

Advanced=4, Proficient=3, Partially Proficient=2, and Unsatisfactory=1.

<div align="center">**Summary**</div>

To examine the research questions, 104 participants were randomly assigned to

one of four groups (n=26) and asked to assign an academic profile for the presented voice

or voice and face condition. The student presentations each included a Black or White

student reading a predetermined passage, and half also included a stock photograph of a

Black or White student. The resulting categorizations of student performance based on these presentations were analyzed to determine the effect the Black or White voice has on teacher expectations of student ability and if this relationship was subject to implicit bias.

CHAPTER IV

ANALYSIS OF DATA

Introduction

The primary goal of this study was to determine the effect of vocal prosody on teacher expectations and the degree to which implicit bias may affect teacher expectations. This chapter includes the statistical findings for this study including a description of the participants, their levels of implicit bias, and the results for each research question. This chapter includes the statistical findings from the macro to the micro level including a general comparison between groups. The different implications of the White and Black face, in combination with or separate from the White and Black voice, were explored as well. The predictive ability that implicit bias ratings have on teacher expectations of White and Black students (based upon their voice and face) is likewise discussed.

Demographics and Descriptive Statistics

Teacher-Participants

The two school districts from which the participant sample was drawn had a combined nearly 75% White teacher population. The sample of teachers recruited for this study were similar, although a slightly higher percentage (80%) endorsed their race as White. The average age of teacher-participants was 37.5 years old, and the average length of teaching experience was 10.1 years (see Table 5).

Table 5

Demographic Make-Up of Study Sample (Teachers)

Characteristics	Count	Percentage
Sex		
Female	80	76.9%
Male	24	23.1%
Racial Identity		
White	84	80.8%
Black	13	12.5%
American Indian	1	1%
Asian	3	2.9%
Native Hawaiian	0	0%
Two or More Races	3	2.9%
Ethnicity		
Hispanic	17	16.3%
Not Hispanic	87	83.7%
Age		
21-30 years old	29	27.9%
31-40	38	36.5%
41-50	24	23.1%
51-60	12	11.5%
61-70	1	1.0%
Mean	37.53	
Years Teaching		
1-5 years	42	40.4%
6-10	20	19.2%
11-15	15	14.4%
16-20	16	15.4%
21-25	5	4.8%
26-30	3	2.9%
31-35	2	1.9%
36-40	1	1.0%
Mean	10.13	
Area of Teaching		
Special Education	60	57.7%
General Education	44	42.3%
School District		
District A	73	70.2%
District B	31	29.8%
Sample size	104	

Teacher-participants were randomly assigned to group conditions using a random number generator. Table 6 details the demographics of each group after this random assignment. Of note, Group Two contained more Black teachers (seven) than the other three groups combined (two each), and also had the highest average number of years of experience.

Table 6

Participant Demographics by Group Condition

Experimental Group	Mean Age (years)	Mean Experience (years)	White Participants	Black Participants	Neither White nor Black Participants
Group One (White Voice only)	36.27	9.58	23	2	1
Group Two (Black Voice only)	37.89	10.75	18	7	1
Group Three (White Voice, White Photo)	38.96	10.52	21	2	3
Group Four (Black Voice, Black Photo)	37.00	9.65	22	2	2
All groups	37.53	10.13	84	13	7

Student Ratings

As discussed, participants were asked to select an academic profile that they believed best represented the student's academic ability after reviewing the voice recording with or without a student photo depending on their assigned group condition. These academic profiles were generated to correspond to an academic grading scale from Unsatisfactory to Advanced. In the analysis phase of this study, numeric values were assigned to their selections according to the following: 1-Unsatifactory, 2-Partially

Proficient, 3- Proficient, 4-Advanced. From among the group conditions, Group Two

(Black voice only) scored the lowest average academic profile rating (3.038), while

Group Three (White voice accompanied by White student photo) scored the highest

(3.423; see Table 7).

Table 7

Average Academic Profile and Standard Deviation by Group Condition

	Mean Academic Profile	*SD*
Group One (White Voice only)	3.385	0.738
Group Two (Black Voice only)	3.038	0.706
Group Three (White Voice, White Photo)	3.423	0.743
Group Four (Black Voice, Black Photo)	3.077	0.781
All groups	3.231	0.762

Implicit Association Test Scores

When the IAT is completed, it produces one of six qualitative scores ranging from

Strong Preference for Black to *Strong Preference for White*. In analyzing the bias for this

study, these qualitative scores were codified from -3 to +3, with -3 being *Strong*

Preference for Black, 0 being *No Bias*, and +3 being *Strong Preference for White*. These

levels were recoded such that 1 represented *Strong Black* up to 7 indicating *Strong White*.

A middle point, *No Bias*, was assigned a value of 4. Table 8 identifies how many

participants fell into each category in each experimental group.

Table 8

Implicit Association Test Scores and Means by Experimental Group

IAT Bias Score	Group One (White Voice)	Group Two (Black Voice)	Group Three (White voice, White Photo)	Group Four (Black Voice, Black Photo)	All Groups
Strong Black (1)	0	1	2	1	4
Moderate Black (2)	0	0	1	4	5
Slight Black (3)	1	2	0	0	3
No Bias (4)	5	8	5	6	24
Slight White (5)	3	5	3	6	17
Moderate White (6)	11	5	6	7	29
Strong White (7)	6	5	9	2	22
SD	1.146	1.480	1.850	1.621	1.583
Mean	5.615	4.962	5.308	4.577	5.116

Compared to all those who have take the race IAT between December 2002 and December 2015 ("Implicit bias: Is everyone racist?", 2017), this study's participants were largely similar with regard to proportional representation of the bias scores, particularly in the categories of Moderate Black and Slight to Strong White. However, this sample demonstrated "No bias" at a great rate than the population that completes the IAT (23.1% vs 18%; "Implicit bias: Is everyone racist?", 2017); also of note, this study sample was

slightly more likely to be categorized in the Strong Black preference group than the general population (3.8% vs 2%; "Implicit bias: Is everyone racist?", 2017). Interestingly, the group that had the most Black participants (Group 2) did not have the most bias for Black; this distinction belonged to Group 4, the group that viewed the Black photo accompanying the recording of the Black student.

Statistical Analysis

Determining Differences Between Groups and Teacher Expectations

In order to determine whether there was a difference in the teacher expectations based upon the condition group they were assigned to, an ANOVA was completed. As seen in Table 9, there was no significance difference between the assigned condition and teacher expectations ($p = .242$). Therefore, it is unlikely that a definite bias for or against White or Black students can be said to exist for these teachers with regards to teacher expectations as prompted by the voice and/or face.

Table 9

Analysis of Variance of Relationship Between Teacher Expectations and Condition Groups

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	2.385	3	0.795	1.417	0.242
Within Groups	56.077	100	0.561		
Total	58.462	103			

**Isolating Differences Between Voice
Type On Teacher Expectations**

To determine the effects of the voice as a factor separate from the group design, a different set of ANOVAs was conducted. This separation allowed the researcher to determine whether there was a relationship between voice type (i.e., White or Black) and teacher expectations, regardless of whether an image accompanied the voice. It was determined that there was no significant relationship as the significance level was 0.068 (see Table 10).

Table 10

Analysis of Variance of Relationship Between Teacher Expectations and Student Voice

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	1.885	1	1.885	3.398	0.068
Within Groups	56.577	102	0.555		
Total	58.462	103			

In order to further assess the relationship between the voice and the teacher expectations, an ANOVA investigating the relationship between teacher expectations and the race of the voice was completed. With an ANOVA looking at the relationship between the teacher expectations and the White voice, no significance was determined as the level of significance was 0.068 (see Table 11).

Table 11

Analysis of Variance of the Relationship Between Teacher Expectations and White Student Voice

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.885	1	1.885	3.398	0.068
Within Groups	56.577	102	0.555		
Total	58.462	103			

As there appeared to be a trend determined when looking at the White voice and its impact on the teacher expectations, a linear regression was run to further determine the White voice's ability to predict the teacher expectation. It was determined that the White voice was not able to significantly predict the rating, given the significance level of 0.068 (see Table 12). It does, however, continue to support that there is a trend between the White voice and the teacher expectations; as the presence of the White voice is known the unit of change in the rating increases by 0.269 units. The R squared value for White voice was 0.032 which indicates that White Voice is only able to predict 3.2 percent of the teacher expectations.

Table 12

Linear Regression of Teacher Expectation and White Voice

		Coefficients[a]				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.135	0.103		20.668	0.000
	White voice	0.269	0.146	0.180	1.843	0.068

a. Dependent Variable: Teacher expectation

The same process was used to assess the impact of the Black voice on the teacher

expectations as was used for White voice. The ANOVA analyzing the relationship

between the Black voice and teacher expectations determined that there was no

significant relationship, as the level of significance was 0.103 (see Table 13).

Table 13

Analysis of Variance of the Relationship Between Teacher Expectations and Black Student Voice

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	1.512	1	1.512	2.708	0.103
Within Groups	56.949	102	0.558		
Total	58.462	103			

Even though the relationship between the Black voice and teacher expectations

was determined to be insignificant, a linear regression model was run to further support

that finding. As expected, the relationship between the teacher expectations and the

presence of a Black voice was not significant, and the Black voice did not predict teacher

expectations. The determined R squared value was 0.026 (see Table 14). The R squared

value indicates that the Black voice is only able to predict 2.6% of teacher expectations,

indicating there are far more significant factors that influence them.

Table 14

Linear Regression of Teacher Expectation and Black Voice

		Unstandardized Coefficients		Standardized Coefficients		
		Coefficients[a]				
Model		*B*	Std. Error	*Beta*	*t*	Sig.
1	(Constant)	2.392	0.105		22.863	0.000
	Black voice	-0.241	0.147	-0.161	-1.646	0.103

a. Dependent Variable: Teacher Expectation

Isolating Effect of Face on Teacher Expectations

To determine the effects of the face separate from the group design, a different set of ANOVAs was conducted. This separation allowed for the researcher to determine the relationship the face had on teacher expectations. When looking at the effect of the face on teacher expectations, it was determined that there was no significant relationship as the significance level was 0.487 (see Table 15), indicating that there was no significance in teacher expectations when a Black or White face was shown.

Table 15

Analysis of Variance of the Relationship Between Teacher Expectation and Student Face

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	0.827	2	0.413	0.725	0.487
Within Groups	57.635	101	0.571		
Total	58.462	103			

To determine the influence that the White face has on the teacher rating, an ANOVA was completed. In the ANOVA assessing the relationship between the White

face and the teacher expectations, no significant relationship was found. The level of

significance was determined to be 0.231 (see Table 16).

Table 16

Analysis of Variance of the Relationship Between Teacher Expectation and White Student Face

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.821	1	0.821	1.452	0.231
Within Groups	57.641	102	0.565		
Total	58.462	103			

Even though the relationship between the White face and teacher expectations

was insignificant, a linear regression model was run to further support that finding (see

Table 17). As expected, the relationship between teacher expectations and the White face

was not significant; the White face had no predictive ability in regards to teacher

expectations. The determined R squared value was 0.014. The R squared value indicates

that the White face was only able to predict 1.4% of the variation in teacher expectations

suggesting it had very little impact on teachers' expectations.

Table 17

Linear Regression of Teacher Expectations and White Student Face

	Coefficients[a]					
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.218	0.085		26.058	0.000
	whiteface	0.205	0.170	0.118	1.205	0.231

a. Dependent Variable: Teacher expectations

To determine the influence that the Black face condition had on teacher expectation, an ANOVA was completed. In the ANOVA assessing the relationship between the Black face and the teacher expectations, no significant relationship was found. The level of significance was determined to be 0.765 (see Table 18).

Table 18

Analysis of Variance of the Relationship Between Teacher Expectation and Black Student Face

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	0.051	1	0.051	0.090	0.765
Within Groups	58.410	102	0.573		
Total	58.462	103			

Even though the relationship between the Black face and teacher expectations was determined to be insignificant, a linear regression model was run to further support that finding (see Table 19). As expected, the relationship between teacher expectations and the Black face was not significant (F=.09, p = .765). The Black face had no predictive ability in regards to teacher expectations. The determined R squared value was 0.001. The *R* squared value indicates that the Black face was only able to predict 0.1% of the variation in teacher expectations.

Table 19

Linear Regression of Teacher Expectations and Black Student Face

	Coefficients[a]					
		Unstandardized Coefficients		Standardized Coefficients		
Model		*B*	Std. Error	*Beta*	*t*	Sig.
1	(Constant)	2.282	0.086		26.633	0.000
	blackface	-0.051	0.171	-0.030	-0.299	0.765

[a]Dependent Variable: Teacher expectations

Determining Differences Between Groups, Group Level of Bias, and Teacher Expectations

An analysis of the relationship between the teacher expectation and the bias level was completed in order to determine if overall there was a significant difference in the teacher expectations based upon their level of racial bias. It was determined that there was no significant difference in the teacher expectations of student performance and teachers' level of bias ($p = 0.687$; see Table 20).

Table 20

Analysis of Variance of the Relationship Between Teacher Expectation and Bias Level

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	2.272	6	0.379	0.654	0.687
Within Groups	56.189	97	0.579		
Total	58.462	103			

In order to further ascertain the impact that implicit bias had on the teacher expectations, an ANCOVA was used. The ANCOVA analyzed the relationship between the teachers' expectations from the four groups with the level of bias used as the

covariant variable. It was determined that the teacher's level of bias had no effect on their ratings of academic expectations when used as a covariate and did not change the relationship between the rating and the voice and/or face.

In order to further support the findings concerning bias level for each group and teachers' expectations, a linear regression model was completed (see Table 21). The bias level and the group did not predict the academic expectation rating. The R squared value was 0.06, which indicates that only 6% of the variation in ratings among group conditions can be attributed to the bias rating. This finding indicated that there are more salient variables than implicit bias, student voice, and student face that influence teacher expectations.

Table 21

Linear Regression of Teacher Expectations and Bias and Group Condition

		Coefficients[a]				
		Unstandardized Coefficients		Standardized Coefficients		
Model		*B*	Std. Error	*Beta*	*t*	Sig.
1	(Constant)	2.369	0.211		11.251	0.000
	BIAS	-0.037	0.048	-0.077	-0.767	0.445
	GROUPNUM	0.002	0.068	0.003	0.030	0.976

a. Dependent Variable: Teacher expectations

CHAPTER V

DISCUSSION

Introduction

This chapter provides a discussion of the findings of this study and the conclusions and implications of these results. This chapter begins with an overview of the study findings and how these relate to the research questions and previous research. The implications and conclusion of this study are discussed and directions for future research are provided.

Summary of Study

An experimental quantitative research design was used to test whether vocal prosody can elicit implicit racial bias in teachers' expectations and evaluations of students. To determine the influence of vocal prosody and skin color on teachers' evaluation of students' academic abilities, 104 teachers who work within a large metro area were randomly assigned to one of four treatment groups. Variation among the groups was designed to determine the influence of voice (without a visual image) or face and voice on teacher expectations of a student's performance.

To answer the first research question (Q1, *Is there a difference in teacher expectations based upon a student's vocal prosody alone between typical Black and White voices?*), the teachers in Groups 1 and 2 listened to either a White or Black third-grade student read a passage, and then chose the most representative academic profile. To

answer the second research question (Q2, *Is there a difference in teacher expectations based upon the voice and face information they receive?*), the Groups 3 and 4 participant teachers listened to either a White or Black third-grade student read a passage while presented with a corresponding photo of a Black or White boy. All teachers, no matter the treatment group, were administered the implicit bias test upon completion of the first task. The Implicit Association Test was used to assess the teachers' level of implicit racial bias, as that level of bias was to be used to better answer the third research question (Q3, *Can the difference seen in how a teacher evaluates a student be attributed to implicit bias triggered by the voice and/or face?*). The fourth and final research question (Q4, *What is the magnitude of the impact of the voice and the combination of the voice and face on teacher evaluations?*) was to be answered based on the findings of the first three questions, but unfortunately, no statistical significance was found.

The research design and research questions were based on the concept that stereotyping and engaging in biased behavior is a natural cognitive process. The degree to which an individual's behavior is racially biased depends upon how he or she has created categories and expectations of others that are different from them and their motivation to impede biased behaviors. The connections between bias and physical cues of race such as the face have been thoroughly researched. This research design was based upon an argument of analogy between bias and vocal prosody, where the voice was theorized to cue biased behaviors in a similar manner to the face. This study investigated whether implicit racial bias towards students of different races may be due to vocal prosody and skin color. The implications of a positive finding might hold promise for understanding

underlying reasons for the persistent educational gap between students of different races and ethnicities.

Findings

The primary focus of this study was to determine the effects vocal prosody had on teacher expectations and the degree to which they affected teacher expectations. Based upon the statistical findings of this study, there was no significant relationship between a student's vocal prosody and teachers' expectations for that student. Teachers' level of implicit bias also did not have any significant relationship concerning what they expected of a student's academic achievement. That is, the degree to which a teacher holds implicit biases was not connected to how he or she evaluated a student's performance in a meaningful way.

Based upon the findings of this study there is no indication that the educational gap is propagated by implicit racial bias towards Black students based upon their vocal prosody, and there is no conclusive data that skin color propagates this gap either. There is no indication that skin color or vocal prosody influences the expectations a teacher has of a student's academic skills, even in the presence of an implicit bias. It was determined that no matter the teacher's level of implicit bias there was no significant impact on the teacher's expectations of the student no matter the race of the student. It was also determined that there was no connection between a student's skin color and/or vocal prosody and the teacher expectations.

Conclusions

The statistical results of this study indicate that there were no differences in the expectations of teachers based upon the student's vocal prosody alone. While other

studies have endorsed an own-race positivity bias, which indicates that one is more apt to favor those who are within the same racial group as them (Zebrowitz, Bronstad, & Hoon, 2007), findings of this study did not support such a concept in the sample studied.

This study yielded no significant results regarding the difference in teacher expectations based upon the face information the teacher was presented. This finding was contrary to the evidence presented concerning own-race bias. It is expected that a teacher presented with a student face of the similar racial group would favor that student; however, the results indicated that no such relationship existed. This contrary result could be due to the teacher's level of motivation to uphold awareness of their racially biased thoughts and inferences with regards to structural features of race (Amodio et al., 2008). That is, it is possible that teacher participants recognized the implicit biases triggered by the student images and consciously or unconsciously altered their responses to counteract these biases. The lack of significance when looking at the influence of face on teacher rating could be a representation of the study participants' ability to maintain an egalitarian view of students, which impacts their control over prejudicial behavior that could be elicited by the social cues of the face (Amodio et al., 2008). It may be that the sample in this dissertation included a large number of participants who fell into this highly internally motivated category.

Unfortunately, there were no validated tools known to this researcher that could have been used to measure such a variable. Without a way to measure this possible influence, it was impossible to control for this possibility. The lack of bias may speak to the education of the teacher-participants in that they carry such internal motivation. That is, information about bias in the classroom as taught during their teacher education

programs might aide in reducing expression of implicit biases when evaluating student performance.

It is also possible that a teacher's ability to maintain a high level of motivation to act in an unbiased manner was influenced by the low level of cognitive load (Cunningham et al., 2012). That is, the study was conducted in a quiet room with limited distractions and stimuli. Rather than needing to make quick decisions in the complex setting of the classroom, the teacher-participant was able to focus on aspects of the voice, or voice and picture, to determine academic expectations for the student. In the real-world classroom, teachers are often tasked with multiple responsibilities that increase their cognitive load. When taxed this way, people often default to established patterns to improve cognitive efficiency (Cunningham et al., 2012). The experimental conditions did not inhibit the teacher's ability to focus on acting in an unbiased manner as participation occurred at a time when teachers determined they had time to focus and complete the task. Therefore, it could be that the teacher-participants did not default to known patterns (i.e., stereotypes) because their attention was not divided as in their real-world environments.

Future evaluations of how the voice influences teacher expectations or evaluations of student performance might benefit from increasing participants' cognitive load, more closely replicating the multitasking and distractions seen in real classrooms. Having teachers perform the study tasks under greater cognitive load may, therefore, bear more biased expectations. For example, teacher-participants might be asked to remember a list of words, quickly score reading prompts, or carry out some other tasks in addition to completing the study tasks. Further examination into the effect such tasks might have on

cognitive load would need to be conducted before pursuing such a methodology. However, determining if teachers evaluate students differently based on voice when a greater cognitive load is elicited would be of interest.

As there was no statistically significant finding concerning the relationship between the voice and/or face and the teacher's expectations of the student, it is of no surprise that the teacher's level of bias did not contribute to the teacher's ratings of the student. This finding was consistent with the postulation that there is a cognitive process that overrides an individual's predispositions to act (their instinctive response), and favors how they want to act (the response they know to be ethically correct) (Amodio et al., 2004). There was no significant difference in teacher expectations of students based upon vocal of facial information. That is, the voice and the face cannot be used to predict a teacher's expectations of a student.

Limitations

The lack of statistical significance in this study could be attributed to the young age of the "students" in this study. That is, racial and vocal markers may become more saliently associated to stereotypes as children develop. The student voices chosen for this study were third-grade students aged 8 to 9 years. Teachers for children in this age range are accustomed to grading students' oral reading ability, which made a better entryway for the deception procedures employed. That is, it was expected that teachers would find listening to voices in this age range a common practice and would be less suspicious regarding the true intent of the study.

This age range was also chosen because it marks the beginning of the academic gap between Black and White males as measured by standardized assessments. In many

states, third grade is the year when students begin taking their high stakes tests to determine whether they are "on track." Even though the voices used were identified as sounding either Black or White, the association to the stereotypic views of what it means to be a Black or White male might not have been as clearly associated. As most research concerning stereotypic associations and racial bias have utilized adult males, it is hypothesized that the stereotypic associations may be better ascribed to adult males more so than to children.

Changes in Voice Impact the
Strength of the Racial
Association

It has been determined that the Black and White male voice begins to change at an average age of 11.20 years (Fisher, 2010). When looking at fourth-, fifth- and sixth-grade Black and White male students, there is a higher likelihood that male students are experiencing vocal changes in the fifth and sixth grades (Fisher, 2010). The changes in the voice are attributed to the hormonal sex changes in the body (Pedersen, Moller, Krabbe, & Bennett, 1986). The rate at which the vocal apparatus changes is also closely dependent upon the growing body size (Kahane, 1996). It has been determined that a child's voice has an increased amount of spectral noise than adult voices; these differences are attributed to the vocal ligament immaturity, the textural and shape differences of laryngeal cartilage and articular surfaces, and the density of ligaments in the throat (Kahane, 1978). The acoustic characteristics of the voice change are highly impacted by the changes in the anatomic structure, physiologic mechanisms, and the motor control over vocal production (Stathopoulos, Huber, & Sussman, 2011). The changes brought on by puberty impact the vocal timbre of the heard voice. Because such

breadth of change to the mechanisms of the voice occur during puberty, it is postulated that the racialization of vocal prosody is highly linked to the more mature voice.

Eidsheim (2014) postulated that the timbre of the voice has been customarily accepted and racially differentiated through enculturation. Eidsheim (2014) determined that the connection between assumed racial characteristics and vocal timbre is due to the differences in the values and beliefs of the listener regarding race, and the connection is more of a self-fulfilling prophecy of those characteristics than an evaluation of voice and people in general. Carpenter (2014) also indicated that, "…despite the widely accepted recognition that race is a social construct, Americans still talk about what sounds black or sounds white in simplified racial terms," (p. 195). The voice is subject to politics of listening (Eidsheism, 2014), as the act of listening is impacted by the shared views and beliefs of the produced sound. The shared societal beliefs and values of race are ascribed to the voice and in that manner the association is known and projected onto the heard voice (Eidsheism, 2014). Eidsheism (2014) indicated that there is no determined connection between race and the voice produced but that the connection is a societal construct and an extension of the social constructionism of racial differences.

The enculturation of the voice is due to how closely a listening individual is expecting the sound to mirror the reference sound. The interpretation of the racial markings of a voice are then just a measure of the degree to which the listener expects or believes there to be a difference in sound (Eidsheism, 2014). It is therefore postulated that the older, post-pubescent male voice is more closely associated in the collective mind with stereotypes of his race. Children are less likely to be associated with negative stereotype assigned to Black men. It may be that testing for biased evaluation among

teachers will not elicit bias for pre-pubescent males, but would for post-pubescent males, when their voices may more readily associated with the prototypical male voice. Due to the immaturity in the voices used in this study, it would be difficult for this connection to be determined or measured.

Teacher-participants listened to the voices of third-grade males as they orally read a passage. It was determined that the simplest way to introduce the voice into this study was by having a student read a passage aloud; this way, a teacher was less likely to be clued into the racial component of this study. That is, if a teacher was asked to listen to a male student speaking contemporaneously, it would have been difficult (if not impossible) to have a teacher provide a rating of academic expectations based on that student's performance in school as teachers do not objectively grade students outside of academic performance. Because reading was selected as the mechanism of introducing voice to the participants, it was determined that the participants needed to be familiar with the evaluation of oral reading fluency and its influence on other areas of academic performance. Therefore, elementary teachers were purposely selected to participate, and third-grade males were selected to provide the reading samples.

Future research into this topic may include selected voice recordings of older individuals to be evaluated, with careful consideration paid to the context of these recordings. As students progress in the American education system, reading aloud in class becomes less frequent and teachers in secondary education do not routinely perform evaluations of reading fluency; the focus shifts from being able to read fluently to being able to understand the content of the passage. However, by using an oral presentation

format or a debate, voice samples of older students might be introduced to participants in a manner that seems like a realistic task, but also helps to hide the intent of the study.

Implications

This study yielded no significant findings but it does raise an awareness of how racial markers can impact the practice of teaching. After all tasks were completed, the researcher debriefed participants on the true purpose of the study. It was a very rare occurrence for participants not to want to start a discussion concerning race relations. It seemed every teacher had varied experiences and understandings of racial relations and racial biases. Readily, teachers in both districts shared with this researcher that their respective district had, in previous years, provided staff with training in racial relations and equity. Even with this additional education, the teachers were left with many unanswered questions and large gaps in their understanding of bias, and racial bias in particular. An important implication of this study is the importance of furthering the education of current and future teachers in racial bias and its impacts on human behavior.

Furthermore, developing teacher awareness of their own biases and how biases can impact their behavior may positively impact the student-teacher relationship. With a heightened awareness in what one is predisposed to favor, one is more aware of how these biases may influence, and in turn, might decrease the likelihood of biased behaviors. This positive impact could be seen in decreased micro-aggressions towards students of color in the classroom. This practice may help to improve the culture and climate of the classroom and allow all students to feel comfortable to in the learning environment.

The expectations that teachers hold for their students is perceived and interpreted by students (Fisher et al., 2000; Rosenbloom & Way, 2004). This expectation can be as a positive guide for all students if the teacher is aware of his or her biases and is conscious of how these biases impact teaching behaviors. This amplified awareness can positively impact the equity in the classroom environment and how the classroom climate is created for students of varying racial backgrounds. Hopefully, these improved learning climates and stronger teacher-student relationships might have positive consequences for diverse students as they are presented with similar opportunities to participate in class and instances for positive feedback for their efforts. With the impact of bias being a conscious stream of thought for the teacher, a more equitable classroom environment becomes the norm for students and impacts how students learn to relate and interact with their peers of similar or differing racial groups. Teachers who hold higher and more consistent expectations for all students tend to create learning environments that are more conducive for producing academic gains across all racial groups if the teacher holds higher and consistent expectations of the student (Goldenberg, 1992).

Beyond the examination of personal bias and how it impacts one's teaching practices, this study also brings awareness to the societal understandings of vocal prosody and how it impacts how people view themselves and their abilities. This implication of this study is closely tied to the previous implication, as both implications for this study require teachers and districts as a whole to engage in reflective practices. Unlike the first implication, this implication is focused on reflecting how a student might internalize how he or she speaks impacts how others view him or her. This is closely tied to a student's development of self.

Even if there was no significant evidence that the voice is a feature that can cue the unconscious prejudiced categorization process, this relationship can be one understood by in the greater society because of perceived micro-aggressions. For an individual, the voice can become a mental representation of an individual and with it, expectations for that individual. The way a voice sounds can become a discriminating feature of an African American from other racial groups. The distinctive melodic contour of African American English (AAE), formally known as Ebonics, is perceived as an English vernacular, a less sophisticated dialect of English because of its use of "incorrect" grammar and pronunciation. How an individual speaks is a crucial factor in how an individual is evaluated by another. Speakers of AAE are seen as less than Standard American English (SAE) speakers because of the dialect of English they use (James, 1976). The voice is a feature of classification that can go undetected as to its classifying utility due to its non-bodily nature.

This examination of what it means in the larger society to sound like a person from varying racial backgrounds is highly connected to the research of racial passing. The Black community has a long history of efforts to pass for White, as Whiteness is afforded more opportunities (Hobbs, 2014). The passing research is highly centralized around the color of skin and the mannerisms of Whiteness (Hobbs, 2014), but it can be assumed that the speech patterns can shift as well in order to sound White. That is, many Black individuals may choose to speak in SAE or AAE depending on the context.

This study might not have found an overt scientific connection between how a person's voice sounds and what is expected of them educationally, but there is a long history to support that this assumption occurs in racial and ethnic communities. With

school districts continuing to educate their staff to look not only at their own personal biases but also to dissect and understand the implications of the larger societal perceptions and expectations of those from varying racial groups, they can better understand how students are beginning to internalize those societal stereotypes and how that can impact their academic achievement and effort. Just as adults have learned and are aware of the attached meaning of varying racial characteristics (Lewis, 2003) students are becoming aware and are learning these symbolic meanings and using them to legitimize their behavior. Districts should not only continue to focus on staff trainings in understanding race relations but should also provide education to students in the development of stereotypic images and expectations and how to challenge what it means to be a member of a stereotyped racial group. This type of education for both teachers and students could impact the culture and climate of schools and positively impact student outcomes.

Future Research

Further research is needed with regard to the investigation of biased behaviors present in the classroom environment that may or may not be triggered by vocal prosody. The age of the student was not a variable in this study but is an area that should be investigated. As people age, the racial characteristics of speech may become more heightened and elicit a stronger relationship between teachers' expectations and their level of bias. By adding the variable of student age researchers may be better able to understand whether racial makers in the voice become more pronounced with age. As discussed, the study design would need to be implemented in a careful manner to introduce the variable of voice into such a study. This research would allow for a better

understanding of racial makers to be known as well, as this research could also be used to determine whether significant racial markers exist that can cue racial bias.

Future study into vocal prosody's influence on teacher evaluation might also benefit from increasing the cognitive load of the teacher-participants during the study tasks. This additional challenge could help to more directly match the study parameters to the real-world environment, eliminating the possibility of low cognitive loads. As noted, allowing teachers to mediate their biases in the study condition when they cannot (and likely do not) do so in the classroom, may have impacted the researcher's ability to elicit biased responding.

Another area for further research would be to determine whether a teacher's level of familiarity with a student affects his or her expectations of that student. Examining the relationship between student-teacher familiarity and teacher expectations while using racial bias and student race, researchers may be able to understand how or if racial bias impacts the classroom environment. This type of study can better answer the questions concerning the amount of initial racial bias and if racial bias increases or decreases as the school year goes on. That is, does prolonged exposure to racial markers increase or decrease how strongly these markers elicit biased behaviors? Does the degree to which student behavior adheres to prototypical racial behaviors influence how these markers are perceived?

It would also be beneficial to investigate the relationship between student vocal prosody and student behavioral records. The rate at which students are reprimanded or given consequences at school could have a negative influence on their relationship to school and impact their academic achievement. The examination of the relationship of a

student's voice sounding more or less like a prototypical racially disenfranchised group member and their rate of behavioral consequences could enrich the discussion of the racial achievement gap and how racial bias is influenced by prosody.

Clearly, bias is a difficult topic to study. Through the course of this process, the researcher discovered that bias research is a complicated balance of replicating real-world environments, participant emotions, and diligent identification of bias triggers. Many pieces must come together in order for true biases to be exposed and studied. In addition to the considerations above, this researcher may in the future consider recording when participants are acting defensively (perhaps shielding their biased behaviors), and collecting other associated qualitative data. This information would assist not only in understanding teacher perceptions around the topic of bias, but also provide insight into study design around this sensitive topic.

Summary

This study was designed to determine whether there was a relationship between vocal prosody of Black and White students and teacher expectations. It was determined that there was no significant relationship between these variables. It was postulated that the lack of significance could be due to the young age of the students who provided the voice samples. As children age, there may be a higher correlation between racial associations and the way the voice sounds. Likewise, it may be that the cognitive load evoked by this study was not reflective of true classroom environments, allowing teacher-participants to mediate implicit bias reactions. Further research is needed to better determine the influence that vocal prosody has on teacher expectations.

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APPENDIX A

PHOTOGRAPHS

Figure A1. White Student Photo 1.

Figure A2. Black Student Photo 1.

Figure A3. White Student Photo 2.
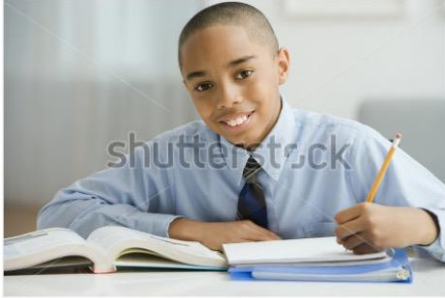
Figure A4. Black Student Photo 2.

Figure A5. White Student Photo 3.

Figure A6. White Student Photo 4.
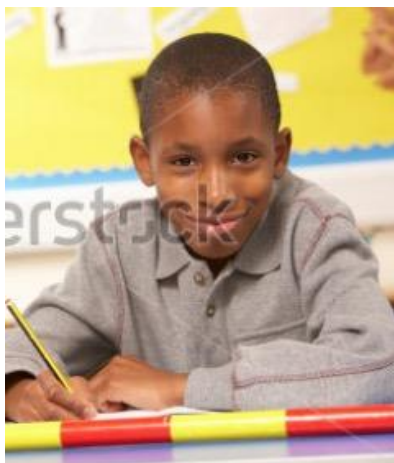
FigureA7. Black Student Photo 3.

Figure A8. Black Student Photo 4.

Figure A9. White Student Photo 5.

Figure A10. White Student Photo 6.

Figure A11. White Student Photo 7.

Figure A12. White Student Photo 8.

Figure A13. White Student Photo 9.

Figure A14. Black Student Photo 5.

Figure A15. White Student Photo 10.

Figure A16. Black Student Photo 6.

Figure A17. Black Student 7.

Figure A18. Black Student Photo 8.

Figure A19. Black Student Photo 9.

Figure A20. Black Student Photo 10.

APPENDIX B

READING PASSAGE

DIBELS Oral Reading Fluency Probe

My Friend I have a new friend at school. She can't walk so she uses a wheelchair to get around. She comes to school in a special van that can transport four people who use wheelchairs. The van brings my friend and another boy to school. My friend is in third grade with me and the boy is a fourth grader. I like to watch my friend get in and out of the van. The driver pushes a button and part of the van floor lowers to the driveway to form a ramp. My friend just wheels up the ramp and goes inside. After she is inside, the driver pushes the button and the ramp puts itself away. When it is time to get out of the van, they do the same thing again. Sometimes I help open the door so she can roll right inside. My friend and I do everything together. Our teacher lets us sit together in the front row, and we always go to lunch together. My friend moves so fast down the hall that she always gets the best seats in the cafeteria. Sometimes we trade sandwiches. At recess, we always play on the same team. My friend sure has strong arms. She hardly ever misses a shot when we play basketball and she can throw the farthest of anyone in third grade.

APPENDIX C

FOCUS GROUP SURVEYS

Please indicate how cute the pictured boys are on a scale of 1 (least cute) to 10 (most cute). Once you have indicated how cute the pictured boy is please indicate how Caucasian the pictured boy looks. Complete this task for each of the 10 pictures. Make sure to match the figure number on the photo with the figure number on the survey.

Figure 1										
Attractiveness	1 (Least cute)	2	3	4	5 (Average)	6	7	8	9	10 (Most cute)
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 2										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 3										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 4										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 5										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 6										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 7										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 8										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 9										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure 10										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Caucasian			Might be Caucasian			Is Caucasian			

Figure C1. White Student Photograph Rating Tool Provided to Focus Group.

Please indicate how cute the pictured boys are on a scale of 1 (least cute) to 10 (most cute). Once you have indicated how cute the pictured boy is please indicate how Black the pictured boy looks. Complete this task for each of the 10 pictures. Make sure to match the figure number on the photo with the figure number on the survey.

Figure 1										
Attractiveness	1 (Least Cute)	2	3	4	5 (Average)	6	7	8	9	10 (Most Cute)
Race	Does not look Black				Might be Black			Is Black		
Figure 2										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 3										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 4										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 5										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 6										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 7										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 8										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 9										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		
Figure 10										
Attractiveness	1	2	3	4	5	6	7	8	9	10
Race	Does not look Black				Might be Black			Is Black		

Figure C2. Black Student Photograph Rating Tool Provided to Focus Group.

Please listen carefully to the recordings. After you have heard each recording please indicate how Caucasian the voice you hear sounds.

Recording 1			
Race	Does not sound Caucasian	Might be Caucasian	Is Caucasian
Recording 2			
Race	Does not sound Caucasian	Might be Caucasian	Is Caucasian
Recording 3			
Race	Does not sound Caucasian	Might be Caucasian	Is Caucasian
Recording 4			
Race	Does not sound Caucasian	Might be Caucasian	Is Caucasian
Recording 5			
Race	Does not sound Caucasian	Might be Caucasian	Is Caucasian

Figure C3. White Student Voice Recording Rating Tool Provided to Focus Group.

Please listen carefully to the recordings. After you have heard each recording please indicate how Black the voice you hear sounds.

Recording 1			
Race	Does not sound Black	Might be Black	Is Black
Recording 2			
Race	Does not sound Black	Might be Black	Is Black
Recording 3			
Race	Does not sound Black	Might be Black	Is Black
Recording 4			
Race	Does not sound Black	Might be Black	Is Black
Recording			
Race	Does not sound Black	Might be Black	Is Black

Figure C4. Black Student Voice Recording Rating Tool Provided to Focus Group.

APPENDIX D

ACADEMIC PROFILES

SHEARWOOD SCHOOL DISTIRCT
PAKER ELEMENTARY SCHOOL
Progress Report
3rd – 5th Grade

Student _____   Room _____

Grade   3 ☒   4 ☐   Date   _____

Quarter   Fall ☒   Spring ☒   Winter ☒

Progress Descriptors
For this marking period:
4 - Exceeding Grade Level Standards-Produces above grade level work consistently and
    independently at this time
3 - Meeting Grade Level Standards- Produces grade level work consistently and independently at
    this time
2 - Approaching Grade Level Standards – Produces grade level work inconsistently at this time
1 - Not Meeting Grade Level Standards- Not yet able to produce grade level work at this time

Communication Arts _____
3   4   4 Develops and applies effective listening skills
4   4   4 Develops and applies effective speaking skills
3   3   4 Develops skills to gather, analyze & evaluate info
3   4   4 Analyzes and evaluates oral and visual media
4   4   4 Uses grade appropriate grammar
4   4   4 Uses grade appropriate vocabulary

Language Arts _____
4   4   4 Makes appropriate book choices for independent reading
4   4   4 Demonstrates reading stamina
4   4   4 Reads grade level texts with fluency and accuracy
4   4   4 Determines literal comprehension at independent reading level
4   4   4 Comprehends grade appropriate informational text
4   4   4 Comprehends grade appropriate fictional text
3   3   3 Determines the meaning of words and phrases in texts
4   4   4 Determines important ideas and themes and provides evidence
4   4   4 Demonstrates an understanding of the author's purpose, techniques and structure
4   4   4 Participates in discussion to deepen understanding

Writing _____
3   4   4 Applies writing process
3   3   4 Composes well developed text using Standard English conventions
3   3   4 Writes effectively in various forms and types
3   4   4 Generates ideas for writing across a variety of formats
3   3   4 Writes with focus and organization
3   4   4 Develops and strengthens writing through planning, elaboration and revision
3   3   4 Consistently edits for conventions of Standard English Capitalization, punctuation, spelling and
        grammar in everyday writing

Social Studies _____
4   4   4 Demonstrates knowledge of concepts, themes and information necessary to promote
        understanding of our nation and the world
4   4   4 Uses speaking listening, reading and writing to analyze, develop and present information
4   4   4 Demonstrates ability to analyze historical issues and current events
3   4   4 Interprets, compares and uses physical and political maps
3   3   3 Identifies and explains the function of local government for the common good
3   3   3 Explains how human and geographic factors impact the local community and cause change over
        time
3   3   3 Identifies and explains economic concepts

Health _____
3   3   4 Demonstrates an understanding of content knowledge
3   3   4 Understands how to prevent health risks
3   3   4 Understands the importance of personal health goals

Mathematics _____
4   4   4 Mathematical Practices- Makes sense of problems and preserves at solving them
3   4   4 Communicates mathematical thinking clearly and precisely, orally and in writing
4   4   4 Number and operations-Demonstrates and of place value in a variety of ways
2   3   3 Demonstrates an understanding of fractions
4   4   4 Operations and algebraic thinking- Demonstrates fluency with basic facts
4   4   4 Analyzes and explains patterns
3   3   4 Measurement and data- Represents and interprets data
4   4   4 Measures and compares lengths using a variety of tools
3   3   3 Geometry- Demonstrates an understanding of the properties of geometric shapes

Science _____
3   4   4 Demonstrates an understanding of concepts
4   4   4 Asks questions, predicts, explains and describes natural phenomena
4   4   4 Uses speaking, listening, reading and writing to develop scientific ideas
3   3   4 Demonstrates an understanding of Earth's nonliving resources
4   4   4 Develops and applies reading strategies
4   4   4 Develops skills & strategies to comprehend fiction and non-fiction

Figure D1. Advanced Academic Profile Presented to Teachers During Study.

SHEARWOOD SCHOOL DISTIRCT
PAKER ELEMENTARY SCHOOL
Progress Report
3rd – 5th Grade

Student _____   Room _____

Grade   3 ☒   4 ☐   Date _____

Quarter   Fall ☒   Spring ☒   Winter ☒

Progress Descriptors
For this marking period:
4 - Exceeding Grade Level Standards-Produces above grade level work consistently and independently at this time
3 - Meeting Grade Level Standards- Produces grade level work consistently and independently at this time
2 - Approaching Grade Level Standards – Produces grade level work inconsistently at this time
1 - Not Meeting Grade Level Standards- Not yet able to produce grade level work at this time

Communication Arts _____
3   3   3 Develops and applies effective listening skills
3   3   4 Develops and applies effective speaking skills
2   2   3 Develops skills to gather, analyze & evaluate info
2   3   3 Analyzes and evaluates oral and visual media
2   3   3 Uses grade appropriate grammar
2   3   3 Uses grade appropriate vocabulary

Language Arts
3   3   3 Makes appropriate book choices for independent reading
3   3   3 Demonstrates reading stamina
3   3   3 Reads grade level texts with fluency and accuracy
2   3   3 Determines literal comprehension at independent reading level
2   3   3 Comprehends grade appropriate informational text
2   3   3 Comprehends grade appropriate fictional text
2   3   3 Determines the meaning of words and phrases in texts
2   2   3 Determines important ideas and themes and provides evidence
2   2   3 Demonstrates an understanding of the author's purpose, techniques and structure
3   3   3 Participates in discussion to deepen understanding

Writing _____
3   3   3 Applies writing process
2   3   3 Composes well developed text using Standard English conventions
2   2   3 Writes effectively in various forms and types
3   3   3 Generates ideas for writing across a variety of formats
2   2   3 Writes with focus and organization
3   3   3 Develops and strengthens writing through planning, elaboration and revision
2   3   3 Consistently edits for conventions of Standard English Capitalization, punctuation, spelling and grammar in everyday writing

Social Studies_____
1   2   3 Demonstrates knowledge of concepts, themes and information necessary to promote understanding of our nation and the world
2   3   3 Uses speaking listening, reading and writing to analyze, develop and present information
2   2   3 Demonstrates ability to analyze historical issues and current events
3   3   3 Interprets, compares and uses physical and political maps

2   2   3 Identifies and explains the function of local government for the common good
2   2   2 Explains how human and geographic factors impact the local community and cause change over time
2   2   2 Identifies and explains economic concepts

Health _____
3   3   3 Demonstrates an understanding of content knowledge
3   3   3 Understands how to prevent health risks
2   3   3 Understands the importance of personal health goals

Mathematics _____
3   3   3 Mathematical Practices- Makes sense of problems and preserves at solving them
2   3   3 Communicates mathematical thinking clearly and precisely, orally and in writing
2   3   3 Number and operations-Demonstrates and of place value in a variety of ways
1   2   2 Demonstrates an understanding of fractions
3   3   3 Operations and algebraic thinking- Demonstrates fluency with basic facts
3   3   4 Analyzes and explains patterns
2   2   3 Measurement and data- Represents and interprets data
2   3   3 Measures and compares lengths using a variety of tools
2   2   3 Geometry- Demonstrates an understanding of the properties of geometric shapes

Science _____
2   3   3 Demonstrates an understanding of concepts
2   3   3 Asks questions, predicts, explains and describes natural phenomena
2   3   3 Uses speaking, listening, reading and writing to develop scientific ideas
2   2   3 Demonstrates an understanding of Earth's nonliving resources
2   2   2 Develops and applies reading strategies
3   4   4 Develops skills & strategies to comprehend fiction and non-fiction

Figure D2. Proficient Academic Profile Presented to Teachers During Study.

SHEARWOOD SCHOOL DISTIRCT
PAKER ELEMENTARY SCHOOL
Progress Report
3rd – 5th Grade

Student _____   Room _____

Grade   3 ☒   4 ☐   Date _____

Quarter   Fall ☒   Spring ☒   Winter ☒

Progress Descriptors
For this marking period:
4 - Exceeding Grade Level Standards-Produces above grade level work consistently and
independently at this time
3 - Meeting Grade Level Standards- Produces grade level work consistently and independently at
this time
2 - Approaching Grade Level Standards – Produces grade level work inconsistently at this time
1 - Not Meeting Grade Level Standards- Not yet able to produce grade level work at this time

Communication Arts _____
2   2   3 Develops and applies effective listening skills
2   2   3 Develops and applies effective speaking skills
3   3   3 Develops skills to gather, analyze & evaluate info
2   2   2 Analyzes and evaluates oral and visual media
1   1   2 Uses grade appropriate grammar
1   1   2 Uses grade appropriate vocabulary

Language Arts
1   1   2 Makes appropriate book choices for independent reading
1   2   2 Demonstrates reading stamina
1   1   2 Reads grade level texts with fluency and accuracy
1   2   2 Determines literal comprehension at independent reading level
1   1   2 Comprehends grade appropriate informational text
1   2   2 Comprehends grade appropriate fictional text
1   1   2 Determines the meaning of words and phrases in texts
1   1   2 Determines important ideas and themes and provides evidence
1   1   2 Demonstrates an understanding of the author's purpose, techniques and structure
2   3   3 Participates in discussion to deepen understanding

Writing _____
1   2   2 Applies writing process
1   1   2 Composes well developed text using Standard English conventions
1   1   1 Writes effectively in various forms and types
2   2   3 Generates ideas for writing across a variety of formats
1   1   1 Writes with focus and organization
1   2   2 Develops and strengthens writing through planning, elaboration and revision
1   1   2 Consistently edits for conventions of Standard English Capitalization, punctuation, spelling and
          grammar in everyday writing

Social Studies _____
2   2   2 Demonstrates knowledge of concepts, themes and information necessary to promote
          understanding of our nation and the world
1   1   2 Uses speaking listening, reading and writing to analyze, develop and present information
1   1   2 Demonstrates ability to analyze historical issues and current events
3   3   3 Interprets, compares and uses physical and political maps
2   2   3 Identifies and explains the function of local government for the common good
2   2   3 Explains how human and geographic factors impact the local community and cause change over
          time
1   2   2 Identifies and explains economic concepts

Health _____
3   3   3 Demonstrates an understanding of content knowledge
3   3   3 Understands how to prevent health risks
3   3   3 Understands the importance of personal health goals

Mathematics _____
1   1   2 Mathematical Practices- Makes sense of problems and preserves at solving them
1   1   2 Communicates mathematical thinking clearly and precisely, orally and in writing
1   2   2 Number and operations-Demonstrates and of place value in a variety of ways
1   1   1 Demonstrates an understanding of fractions
2   2   3 Operations and algebraic thinking- Demonstrates fluency with basic facts
2   2   3 Analyzes and explains patterns
2   3   3 Measurement and data- Represents and interprets data
3   3   3 Measures and compares lengths using a variety of tools
2   2   2 Geometry- Demonstrates an understanding of the properties of geometric shapes

Science _____
1   2   2 Demonstrates an understanding of concepts
1   1   2 Asks questions, predicts, explains and describes natural phenomena
2   2   2 Uses speaking, listening, reading and writing to develop scientific ideas
2   2   2 Demonstrates an understanding of Earth's nonliving resources
1   1   1 Develops and applies reading strategies
2   2   3 Develops skills & strategies to comprehend fiction and non-fiction

Figure D3. Partially Proficient Academic Profile Presented to Teachers During Study.

SHEARWOOD SCHOOL DISTIRCT
PAKER ELEMENTARY SCHOOL
Progress Report
3rd – 5th Grade

Student _____   Room _____

Grade   3 ☒ 4 ☐   Date _____

Quarter   Fall ☒   Spring ☒   Winter ☒

Progress Descriptors
For this marking period:
4 - Exceeding Grade Level Standards-Produces above grade level work consistently and independently at this time
3 - Meeting Grade Level Standards- Produces grade level work consistently and independently at this time
2 - Approaching Grade Level Standards – Produces grade level work inconsistently at this time
1 - Not Meeting Grade Level Standards- Not yet able to produce grade level work at this time

Communication Arts _____
1   1   1 Develops and applies effective listening skills
1   1   1 Develops and applies effective speaking skills
1   2   2 Develops skills to gather, analyze & evaluate info
2   2   2 Analyzes and evaluates oral and visual media
1   1   1 Uses grade appropriate grammar
1   1   1Uses grade appropriate vocabulary

Language Arts
1   1   1 Makes appropriate book choices for independent reading
1   1   1 Demonstrates reading stamina
1   1   2 Reads grade level texts with fluency and accuracy
1   1   2 Determines literal comprehension at independent reading level
1   1   2 Comprehends grade appropriate informational text
1   1   2 Comprehends grade appropriate fictional text
1   1   1 Determines the meaning of words and phrases in texts
1   1   1 Determines important ideas and themes and provides evidence
1   1   1 Demonstrates an understanding of the author's purpose, techniques and structure
1   1   1 Participates in discussion to deepen understanding

Writing _____
1   2   2 Applies writing process
1   1   1 Composes well developed text using Standard English conventions
1   1   1 Writes effectively in various forms and types
1   1   2 Generates ideas for writing across a variety of formats
1   1   1 Writes with focus and organization
1   1   1 Develops and strengthens writing through planning, elaboration and revision
1   1   1 Consistently edits for conventions of Standard English Capitalization, punctuation, spelling and
          grammar in everyday writing

Social Studies_____
1   1   1 Demonstrates knowledge of concepts, themes and information necessary to promote
          understanding of our nation and the world
1   1   1 Uses speaking listening, reading and writing to analyze, develop and present information
1   1   1 Demonstrates ability to analyze historical issues and current events
1   2   2 Interprets, compares and uses physical and political maps
1   1   2 Identifies and explains the function of local government for the common good
1   1   1 Explains how human and geographic factors impact the local community and cause change over
          time
1   1   1 Identifies and explains economic concepts

Health _____
2   3   3 Demonstrates an understanding of content knowledge
2   3   3 Understands how to prevent health risks
2   3   3 Understands the importance of personal health goals

Mathematics _____
1   1   1 Mathematical Practices- Makes sense of problems and preserves at solving them
1   1   1 Communicates mathematical thinking clearly and precisely, orally and in writing
1   1   2 Number and operations-Demonstrates and of place value in a variety of ways
1   1   1 Demonstrates an understanding of fractions
1   1   2 Operations and algebraic thinking- Demonstrates fluency with basic facts
3   3   3 Analyzes and explains patterns
2   2   2 Measurement and data- Represents and interprets data
2   2   3 Measures and compares lengths using a variety of tools
1   1   1 Geometry- Demonstrates an understanding of the properties of geometric shapes

Science _____
1   1   1 Demonstrates an understanding of concepts
1   1   1 Asks questions, predicts, explains and describes natural phenomena
1   1   1 Uses speaking, listening, reading and writing to develop scientific ideas
1   1   2 Demonstrates an understanding of Earth's nonliving resources
1   1   1 Develops and applies reading strategies
3   3   3 Develops skills & strategies to comprehend fiction and non-fiction

Figure D4. Unsatisfactory Academic Profile Presented to Teachers During Study.

APPENDIX E

**CONSENTS & INSTITUTIONAL REVIEW
BOARD APPROVAL**

UNIVERSITY of NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

Project Title: Effect of Vocal Prosody on Elementary Teachers' Perceptions of Black and White Students

Researcher: Chynna S. McCall. B.A., Psychology & Linguistics
        Phone: 303-507-1938
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Research Advisor: Dr. Michelle Athanasiou, Ph.D.
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Purpose and Description: The primary purpose of this study is to identify a photograph and a voice sample that most accurately resembles a Black or White student who would be in the fourth grade.

The participants will be asked to view 20 photographs of elementary age male Black and White students. The participants will be asked to complete a survey indicating on a 1 to 10 ascending scale how attractive the pictured child appears. Participants will also be asked to indicate how White or Black the potential students appears, by indicating if the child does not look Caucasian, might be Caucasian, or is Caucasian and if the child does not look Black, might be Black, or is Black. The Participants will also listen 10 voice recordings. The participants will be asked to determine how White or Black the potential recordings sound, indicating if the child does not sound Caucasian, might sound Caucasian, or does sound Caucasian and if the child does not sound Black, might sound Black, or does sound Black.

At the end of the data collection, we would be happy to share your data with you at your request. The completed surveys will be stored in a locked file cabinet, in a separate location from any identifying information. We will take every precaution in order to protect your confidentiality. We will assign a pseudonym and when we report data; your name will not be used.

Page 1 of 2
Initial _____

Data collected and analyzed for this study will only be accessible by the researcher. Upon the completion of the study the data will be destroyed.

Risks of this study are minimal and no more than what you may experience in daily life. If participating in this study does trigger a strong reaction in you and you feel as if talking about that reaction with a counselor would help you better deal with that reaction, the University of Northern Colorado has a Psychological Services Clinic where you are more than welcome to make an appointment. The Psychological Services Clinic is located in McKee Hall, room 247. You may call the Psychological Services Clinic at (970) 351-1645 to schedule an appointment.

Participants will not be offered any compensation for their participation in this study. The benefits the participants' will receive will be the knowledge that they will be contributing to this area of research and helping to inform the research and academic communities about this topic.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greely, CO 80639; 970-351-2161.

Yes! I agree to participate in this study opportunity.

_____
Participant's Signature   Date

_____
Researcher's Signature   Date

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Initial _____

Figure E1. Consent to Participate in Focus Group.

UNIVERSITY of
NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

Project Title: Effect of Vocal Prosody on Elementary Teachers' Perceptions of Black and White Students

Researcher: Chynna S. McCall. B.A., Psychology & Linguistics
Phone: 303-507-1938
E-mail: mcca7443@bears.unco.edu

**Research
Advisor:** Dr. Michelle Athanasiou, Ph.D.
Phone: (970) 351-2356
E-Mail: michelle.athanasiou@unco.edu

Purpose and Description: The primary purpose of this study is to collect a voice sample of a child reading aloud to be used in a larger research study. The larger research study will be studying the effects that racial markers in a student's voice affect how a teacher evaluates that student's abilities.

If you grant permission and if your child indicates to us a willingness to participate your child will be recorded while reading a selected passage aloud. Your child will also take the Gray's Oral Reading Test, 5th edition.

I foresee no risks to subjects beyond those that are normally encountered playing games in the classroom. Your child's participation will not be solicited during snack, lunch, or nap times. The tasks are fairly simple and the only feedback to your child will be positive (e.g., "You're playing very well." "You did just fine." etc.). This study is not designed to improve your child's reading ability but your child will likely enjoy the and the positive attention received.

Be assured that we intend to keep the contents of the test results private. Your child's recordings will contain no identifying information. To further help maintain confidentiality, computer files of children's performance will be created and children's names will be replaced by numerical identifiers. The names of subjects will not appear in any professional report of this research. Please feel free to phone me if you have any questions or concerns about this research and please retain one copy of this letter for your records.

Thank you for assisting me with my research.
Sincerely,

Chynna S. McCall

Page 1 of 2
Initial _____

Participation is voluntary. You may decide not to allow your child to participate in this study and if he begins participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Sherry May, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, University of Northern

Colorado Greeley, CO 80639; 970-351-1910

Child's Full Name (please print)   Child's Birth Date (month/day/year)

_____   _____

Parent/Guardian's Signature   Date

_____   _____

Researcher's Signature   Date

_____   _____

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Figure E2. Consent to Allow Child to Participate in Voice Recording.

UNIVERSITY *of*
NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

Project Title: Effect of Vocal Prosody on Elementary Teachers' Perceptions of Black and White Students

Researcher: Chynna S. McCall. B.A., Psychology & Linguistics
      Phone: 303-507-1938
      E-mail: mcca7443@bears.unco.edu

Research
Advisor: Dr. Michelle Athanasiou, Ph.D.
      Phone: (970) 351-2356
      E-Mail: michelle.athanasiou@unco.edu

Purpose and Description: The primary purpose of this study is to determine how well oral reading fluency is able to predict a student's overall academic ability.

The participants will listen to a recording of a student reading a passage of text aloud. The participant will then be presented with four different academic records. The participant will select the academic record that best fits the recorded student's overall academic ability; after selecting the academic record the participant will then complete a separate computer based assessment. Both tasks should take about 30 to 45 minutes of the participant's time.

At the end of the data collection, we would be happy to share your data with you at your request. The completed surveys will be stored in a locked file cabinet, in a separate location from any identifying information. We will take every precaution in order to protect your confidentiality. We will assign a pseudonym and when we report data; your name will not be used. Data collected and analyzed for this study will only be accessible by the researcher. Upon the completion of the study the data will be destroyed.

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Risks of this study are minimal and no more than what you may experience in daily life. If participating in this study does trigger a strong reaction in you and you feel as if talking about that reaction with a counselor would help you better deal with that reaction, the University of Northern Colorado has a Psychological Services Clinic where you are more than welcome to make an appointment. The Psychological Services Clinic is located in McKee Hall, room 247. You may call the Psychological Services Clinic at (970) 351-1645 to schedule an appointment.

Participants will not be offered a chance to win a $100 Visa gift card for compensation for their participation in this study. The benefits the participants' will receive will be the knowledge that they will be contributing to this area of research and helping to inform the research and academic communities about this topic.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greely, CO 80639; 970-351-2161.
Yes! I agree to participate in this study opportunity.

_____
Participant's Signature   Date
_____
Researcher's Signature   Date

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Initial _____

Figure E3. Consent for Teacher-Participants to Participate in the Study Tasks.

UNIVERSITY *of*
NORTHERN COLORADO

Institutional Review Board

DATE: August 11, 2015

TO: Chynna McCall, B.A.
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [770247-3] Effect of Vocal Prosody on Elementary Teachers' Perceptions of
                             Black and White Students
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED
APPROVAL DATE: August 11, 2015
EXPIRATION DATE: August 11, 2016
REVIEW TYPE: Expedited Review

Thank you for your submission of Amendment/Modification materials for this project. The University of
Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in
accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and
insurance of participant understanding. Informed consent must continue throughout the project via
a dialogue between the researcher and research participant. Federal regulations require that each
participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior
to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED
adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this
office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please
use the appropriate forms for this procedure. Your documentation for continuing review must be received
with sufficient time for review and continued approval before the expiration date of August 11, 2016.

Please note that all research records must be retained for a minimum of three years after the completion
of the project.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please
include your project title and reference number in all correspondence with this committee.

Thank you for your patience with the UNC IRB process during the summer.

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All of the requested modifications have been made in the materials required. Please be sure to
use all revised, modified and additional materials created through the review process in your
participant recruitment and data collection protocols.

Best wishes with this interesting research and don't hesitate to contact me with any IRB-related
questions or concerns.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of
Northern Colorado (UNCO) IRB's records.

- 2 -   Generated on IRBNet

Figure E4. Approval Letter from Institutional Review Board 2015-2016.

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE: August 29, 2016

TO: Chynna McCall, B.A.
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [770247-4] Effect of Vocal Prosody on Elementary Teachers' Perceptions of
                               Black and White Students
SUBMISSION TYPE: Continuing Review/Progress Report

ACTION: APPROVED
APPROVAL DATE: August 29, 2016
EXPIRATION DATE: August 29, 2017
REVIEW TYPE: Expedited Review

Thank you for your submission of Continuing Review/Progress Report materials for this project. The
University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be
conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and
insurance of participant understanding. Informed consent must continue throughout the project via
a dialogue between the researcher and research participant. Federal regulations require that each
participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior
to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED
adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this
office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please
use the appropriate forms for this procedure. Your documentation for continuing review must be received
with sufficient time for review and continued approval before the expiration date of August 29, 2017.

Please note that all research records must be retained for a minimum of three years after the completion
of the project.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please
include your project title and reference number in all correspondence with this committee.

- 1 -   Generated on IRBNet

Best wishes with your continued work on this project. Your continuation application is approved.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of
Northern Colorado (UNCO) IRB's records.

- 2 -   Generated on IRBNet

Figure E5. Approval Letter from Institutional Review Board 2016-2017.