



2021

## EFFECTS OF RACIAL IDENTITY ON THE ACADEMIC ACHIEVEMENT OF BIRACIAL STUDENTS WITH ACADEMIC SELF CONCEPT AS A MEDIATOR

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EFFECTS OF RACIAL IDENTITY ON THE ACADEMIC ACHIEVEMENT OF BIRACIAL  
STUDENTS WITH ACADEMIC SELF CONCEPT AS A MEDIATOR

By

Kamio A. Jones

A Dissertation Submitted to the

Graduate School

In Partial Fulfilment of the

Requirements for the Degree of

DOCTOR OF EDUCATION

Benerd College  
Counseling Psychology

University of the Pacific  
Stockton, California

2021

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By

Kamio A. Jones

## DEDICATION

This dissertation is dedicated to my three nieces, five nephews, and four godchildren for being my biggest motivation during the times I thought about stopping or could not seem to find a purpose for being in school for so long. Jamari, Elijah, Santana, TaNia, Josiah, Jisselle, Aria, Leo, Kassidy, Lukah, Amarie and Tamia, I hope you all know that you can accomplish anything regardless of the stressors life puts in front of you. You all equally can accomplish more than what society attempts to limit you to. My educational career has caused me to sacrifice time with all of you, but I know it is all worth it when I see the curiosity I have and will have instilled in you all, about your own futures. You are all capable and nothing or nobody can change that.

## ACKNOWLEDGEMENTS

I have many thanks to give to some inspirational professors and colleagues that helped me and continued to inspire me through my journey of completing my dissertation. First on the list is my prior supervisor and peer Dr. Amy Merenda. I met Dr. Merenda the day that I interviewed with the Dean of Benerd College to get accepted into the school psychology graduate program at University of the Pacific. She was a student already in the program at the time and she informed me that she was in the Ed.D. program and shared some of the reasons why she decided to take that path. Ever since that day, I had it set in my mind that I would also pursue my Ed.D. and follow in her footsteps. She also was my internship supervisor during the year that I did the bulk of my dissertation writing and she assisted me and gave me helpful tips along the way. I also want to acknowledge Dr. Jaclyn Griffen, I took her Pluralism class my first semester in graduate school and some of the theories we learned about in her class is what inspired me to go forth with the topic I chose for my dissertation. Another wonderful individual who kept me motivated throughout this process was Dr. Heidi Stevenson, she helped me through the beginning stages of writing my dissertation and gave me great advice about never getting discouraged as a young woman in the field of research. Those words she shared will always stick with me.

Finally, the constant help and accommodations that Dr. Justin Low provided to me throughout my entire journey of completing my dissertation. He made time for my questions, whenever I had them and made statistics more understandable for me. He made sure that I was able to still complete my proposal virtually, even with all the uncertainty that was occurring around us at the time.

EFFECTS OF RACIAL IDENTITY ON THE ACADEMIC ACHIEVEMENT OF BIRACIAL STUDENTS WITH ACADEMIC SELF CONCEPT AS A MEDIATOR

Abstract

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University of the Pacific  
2021

The current study investigated the relationship between racial identity and academic achievement of biracial high school students and whether academic self-concept mediated the relationship. Data from the National Institute of Child Health and Development- Study of Early Child Care and Youth Development was examined. A structural equation model with two groups was used to assess if academic self-concept is a mediator for the relationship between racial identity and academic achievement. Results suggest that academic self-concept in Math or English did not mediate the relationship between racial identity and scores on the WJ-R Passage Comprehension and Applied Problems subtest for both groups of biracial high school students. In addition, racial identity did not have a significant effect for both groups of biracial students on academic self-concept in English and Math. The insignificant findings from the current study highlight that race and ethnicity do not impact Black and White biracial high school students or Latin and White biracial high school students' educational success and this information should be applied by educators, parents, and families as they help biracial children navigate through their educational experience.

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## CHAPTER 1: INTRODUCTION

Biracial or multiracial individuals are considered the fastest growing population in the United States, as there are now more than 7.5 million people who identify as being multiracial (Florido, 2013). The multiracial population growth is more than four times any other racial or ethnic group (Florido, 2013). For the purposes of this study biracial refers to an individual of two different races (Merriam-Webster Inc., 2018a). Multiracial or multiethnic refers to someone who represents various races or ethnicities, not just one (Merriam-Webster Inc, 2018b).

Most individuals seek to find a sense of belongingness but, those who are more than one race or ethnicity will go through a racial identity development process to fulfill that feeling of fitting in. Early research has focused on the human's need for belongingness. For example, in Maslow's Hierarchy of needs, he ranked belonging as the third basic human need (Maslow, 1954). Individuals begin their life with the most crucial form of belonging through attachment to a caregiver and it has been shown that individuals who were not able to achieve a healthy attachment to a caregiver may be at risk for depression, anxiety, and suicide (Wickham, 2019). Therefore, struggling to reach a sense of belongingness can heavily impact one's behavior and multiracial or biracial individuals have the highest number of individuals with mental health problems (Donnella, 2017). In conclusion, there is a huge need for professionals in any field to be able to provide services that will increase healthy functioning and a better ability to deal with the difficulties of being a multiracial individual (Henriksen & Maxwell, 2016). For the current study, the chosen racial identity of multiracial high school students was examined to see if it had any impact on the students' academic self-concept which is their opinion of their academic behaviors, performance, and achievement, and if their level of academic self-concept influenced their academic achievement (Nugent, 2013).

This chapter will provide an overview of the research related to multiethnic individual's racial identity development and the importance of academic self-concept. Along with an overview of the research, important terms will be defined. This chapter will then look at the theoretical framework of intersectionality, which will guide the current study. This will be followed by discussing the purpose of conducting the current study. Finally, the importance of the current study and the possible contributions of the findings that came from this study, will be discussed.

### **Background**

An individual can form their identity based off many factors like race, sexual orientation, gender, age, among other demographic descriptors. Identity formation can be conceptualized as an individual's attempt to define themselves through personal values and their place in the social world (Matthews, Banerjee, & Lauermann, 2014). Identity development has been shown to have impacts on individuals, but the current body of research has focused more heavily on monoracial individuals in relation to their attitudes toward learning. An individual who is monoracial is one race only and not a person of mixed race (Oxford University Press, 2018). The terms multiracial and multiethnic may be used interchangeably due to the similar definitions. Racial identity is an individual's sense of identifying by saying that they belong to a race or ethnic group (Nugent, 2013).

Stonequist (1937) was the first person to explore if there is a specific model for identity development of a biracial population, and this sparked the interest in figuring out how multiracial individuals develop a racial/ethnic identity (Henriksen & Maxwell, 2016). This then led to the first main theory that has been discussed in multiracial research most frequently, which is the Biracial Identity Development Process. Poston (1990) proposed the Biracial Identity

Development (BID) process. This theory has five stages. During the personal identity stage, which typically occurs during early childhood, the biracial child's identity forms from their self-esteem that came from their family and other significant people in their lives. The second stage, choice of group categorization, which occurs in the early elementary years, involves the child making a racial identity choice. The third stage of the BID process occurs during adolescence and is called enmeshment or denial stage. During this stage, adolescents may feel confused, have self-doubt, or feel a lack of acceptance. The fourth stage, appreciation, is when the individual begins to accept the differences between all their different racial parts. The feelings of guilt are then replaced with feelings of acknowledgment for all the parts that make up the entire individual. Finally, the last stage of Poston's BID process theory is integration. This is the stage where individuals go further than just appreciating each of their races or ethnicities but instead combines all the characteristics from each race or ethnicity into one complex identity (Kato, 2000).

Maria Root followed Poston and changed the way that the identity development process was viewed regarding individuals with multiple heritage backgrounds. Henriksen (2013), adapted the Multiple Heritage Identity Development (MHID) model, which is the second main theory that is discussed in research and it focuses on the identity formation process from birth. The MHID model also emphasizes the strengths of the individual and the family, rather than the deficits. In this model, there are 6 phases that do not have to occur in a certain order, can be revisited multiple times in the individual's life and not all individuals have to experience each phase. The neutrality phase occurs from birth to five years old and this is when children are unaware that they are different. In Kindergarten to about first grade, the child goes through the awareness phase where they understand they are different, but they do not know why until

negative interactions with peers occur. They then may enter the phase where they fully understand their multiple heritages and may reach the next phase of experimentation. In the experimentation phase the individual seeks to find an ethnic group to fit into. Once they enter the transition phase, they begin the process of figuring out what ethnic identity they will focus on for the rest of their life. Finally, individuals may enter the recognition phase where they either choose the racial identity that society has assigned them, identify with all their heritages, choose only one heritage, create some new identity, or identify with certain races depending on the situation they are in (Henriksen & Maxwell, 2016).

Multiracial youth may perceive being multiracial as a good thing, but it has been shown that those who discuss racial issues with their family and teachers are more likely to perceive the fact that they are more than one race as being a positive attribute (Kerwin, Ponterotto, Jackson & Harris, 1993). Finding multiraciality as a positive attribute can contribute to a student's self-esteem and self-esteem has been demonstrated to be linked to self-concept (Hassan, Jami, & Aqeel, 2016).

Academic self-concept is influenced by a student's educational experiences and their interpretation of the education environment (Saki & Nadari, 2018). Students' academic experiences can be affected by racism, institution type, ethnicity, gender, among other factors and this can further have an impact on a student's academic self-concept (William & Chung, 2013). Those are not the only factors that can affect a student's academic self-concept or perception about their abilities, students from families with high socioeconomic status tend to approach academic challenges with a greater sense of internal control over success than students from lower-SES families (Young et al., 2011). It can be concluded that family background factors, like family income and parents' education background could also influence the child's

academic self-concept. It is also one of the most important and influential factors in the learning process and it forms as the result of a student's comparison of themselves to others (Saki & Nadari, 2018). It has also been found that biracial students would more likely choose to learn from a member of their primed racial in-group, meaning that if the child is two races but they identify more predominately with one race over the other they would prefer to learn from someone who is the same race as their primed race. Williams and Chung (2011) discovered that there is a strong relation between Black/African students' cultural orientation and racial identity and their academic self-concept (William & Chung, 2013). But there has been an exclusion of biracial and/or multiracial children in studies surrounding children's race-based learning preferences, meanwhile schools are attempting to transform into more accepting and open-minded environments regarding diversity (Gaither, Chen, Corriveau, Harris, Ambady, & Sommers, 2014).

School professionals are now being trained to encourage ethnic and racial diversity in hopes to better prepare teachers and further help impact students' attitudes towards learning and the school environment. In 2000, there were not many books available for children and adolescents on multiracial issues (Kato, 2000). But many curriculums are beginning to show a diverse society in textbooks and in other visual ways, still there may not be many biracial or multiracial people or families portrayed (Kato, 2000). Overall, multiracial individuals experience identity formation differently from their monoracial counterparts and there are many current changes regarding diversity in schools. Considering all of this, it is of interest to explore multiracial students' attitudes towards school and learning.

### **Description of the Problem**

Among Americans under the age of 18, the biracial population went up by 46% since 2000, which makes biracial children the fastest growing group of youth in America (Gaither et al., 2014). There is also a lack of data on the multiracial experiences on college and university campuses prior to 2003, when the United States Census allowed individuals to select more than one race or ethnicity on the census form. This means that most services and programs that are offered on college campuses were not established with the multiracial population in mind and these services or programs may not meet the specific needs of the population (Garbarini-Philippe, 2010). With this said, those working in education will continue to interact with more students who are biracial or multiracial and it is important for them to understand how belonging to two or more races may influence these students' educational experience.

The racial identity development of biracial and multiracial individuals differs from those who are monoracial. Investigating how racial identity effects biracial or multiracial students' academic self-concept, will not only benefit workers in the education field, but it can also benefit the parents who are raising biracial or multiracial children. Identity development is a huge part of a child's overall development. One of the factors that can influence identity development is how a child's family and community support their chosen identity (Wardle & Babtiste, 1988). Factors like peer relationships, family academic expectations, and teacher relationships can all influence an individual's academic self-concept (Calero, Dalley, Fernandez, Davenport-Dalley, Morote, Tatum, 2014). For instance, a study was conducted, showing that young multiracial or biracial children prefer to make friends with those who are of a similar racial identity (Gaither et al., 2014). This may become even more difficult if multiracial students are in a school where they are not members of the dominant race because they may experience social isolation if they



do not fit into one race or another (Kenny & McEachern, 2009). Students who are more than one race or ethnicity could also have competing views on education due to possibly having more than one cultural influence on academic expectations because different cultures value education in different ways (Calero et al., 2014).

An individual's identity has also been looked at to understand adolescents' motivation to achieve (Matthews, et al., 2014). Therefore, understanding the racial identity development of biracial or multiracial students and its impact on academic self-concept is important because it has been shown that monoracial students who have a higher academic self-concept tend to perform better academically and have higher confidence than those who have a low academic self-concept (Calero et al., 2014). Those students who have higher confidence may be more willing to enroll in rigorous classes or challenge themselves in various ways.

Overall, biracial, or multiracial students have been excluded in literature concerning the influences identity has on academic self-concept. Biracial or multiracial children are becoming a population that many professionals in the education system are interacting with more frequently (Wardle, 1992). The current study will better help education professionals understand how biracial and multiracial high school students' racial identity influences their ability to achieve academically. Culturally responsive teaching is a, "pedagogy that recognizes the importance of including students' cultural references in all aspects of learning" (Ladson-Billings, 1994). Hopkins (2009) found that teachers who endorse multiculturalism in their classroom tend to have better relationships with their students. The teacher-student relationship, in turn has an impact on academic self-concept (Calero et al., 2014). Some but not all students from minority cultures may also feel pressured when entering school to assimilate into the majority culture and abandon their own cultural beliefs. In turn, this can impact their emotional and cognitive development

and result in poor school success (Sheets, 1999). But teachers are not the only professionals on a school campus that will encounter multiracial students, counselors and other miscellaneous school staff members can also benefit from the purpose of the proposed study. This study can help school staff or counselors raise awareness within multiracial students about what factors may affect their academic achievement, which can in turn assist the staff in facilitating conversations about change on campus for this population (William & Chung, 2013). The results from the current study can help encourage school campuses to create welcoming spaces for multiracial students because these spaces on school campuses allow them to express their identity (Garbarini-Philippe, 2010). Professionals must learn to overcome any prejudices in themselves because exposure to prejudice is a major factor for poor mental health (Utsey, Giesbrecht, Hook, & Standard, 2008). Some common effects of prejudice include imposter syndrome, where prejudice causes an individual to believe that they are not as capable as their peers or stereotype threat, in which the exposure to negative stereotypes causes an individual to confirm the stereotype (Edwards, 2019). Both of which, have an impact on academic self-concept and academic achievement. Another example could be when a therapist who is unaware of the effects of prejudice or who does not recognize their own prejudices may inadvertently question a client's experiences or reality (Priest, 1991). In conclusion, if professionals can identify and overcome their prejudices it may allow and provide for more experiences to support the identity development of biracial and multiracial students so that they can have better academic self-concept and perform better academically.

### **Theoretical or Conceptual Framework**

Students may experience their academic journey differently from one another because of their social identities. An individual's academic experience can be influenced by the same

factors identity is influenced by, which could be race, gender, religion, socioeconomic status, and even environmental factors. All these factors impact one another and may work together to affect an individual's experiences in life. This coming together of many identities of a person and how they all effect who a person is in society is the basis of the Intersectionality Theory. Another main idea of the Intersectionality theory is that the categories of an individual's social identity can work with one another to create domination or oppression in the person's life. In summary, Intersectionality theory says that each part of an individual's identity can either create disadvantages or advantages in relation to experiences in an individual's life (Gopaldas, 2013).

There are two subcategories of the Intersectionality theory. These two subcategories are structural intersectionality and political intersectionality, but for the purpose of this study only structural intersectionality will be analyzed. Structural intersectionality is when multiple social systems overlap each other to shape or even oppress a person (Museus & Griffin, 2011). In the current study, this can be seen in multiracial individuals because they are more than one race or ethnicity and they may be experiencing different inequities from all, some, or just one of the races that they identify with.

In 2017, 66 percent of students attended school in a diverse district and about 11 million children were in districts with highly integrated schools (Rabinowitz, Emamdjomeh & Meckler, 2019). The Intersectionality theory is a good lens to use to analyze multiracial high school students in the education system because the student population is continuously becoming more diverse. Individuals who are a part of a population of people who are at the intersection of a marginal group and a privileged group tend to undergo unique experiences that are both different from the marginalized and privileged group (Museus & Griffin, 2011). For example, a multiracial individual who is African American, White, and Japanese may experience different

things from those who are only African American, White, or Japanese. In this case, the multiracial individual could experience some benefits for being partly White and Japanese but may also experience some losses for being partly African American or vice versa. Using the Intersectional Theory lens, the researcher examined multiracial students' racial identity and how it has an impact on their academic self-concept. To relate this back to the Intersectionality theory, the students' racial identity is just one part of their social identity but, can be broken down into multiple identities due to being more than one race and their academic self-concept is a part of their educational experience. This means that by using this lens the researcher was also able to analyze how being more than one race can impact an individual's experience in education, in the current study it is their experience in high school.

### **Purpose of the Proposed Study**

The focus of the current study is to examine the nature of the relationship between the racial identity of multiethnic high school students and their academic achievement scores in Math and English. This study will also analyze whether the students' academic self-concept in those subjects mediates the nature of the relationship between racial identity and their academic achievement scores.

### **Significance of the Study**

An increasing number of people in America are born into interracial or multiracial families, specifically from 2000 to 2009 the number of self-identified multiracial individuals increased by 32% (U.S. Census Bureau, 2010). As the multiracial population continues to grow, it is important that their racial identity development is understood. This current study on the relationships between racial identity of multiracial high school students (i.e., black/white mixed and Latin/white mixed) and academic self-concept was conducted because it will add to the

knowledge about concepts within racial-ethnic subgroups and can help get rid of societal stereotypes of a “general multiracial group” (Charmaraman, Woo, Quach, Erkut, 2014). In addition, to contributing to the research of specific subgroups in the vast multiracial population this current study will also contribute to the different themes that have been focused using a multiracial population. There has been research conducted about learning preferences in multiracial individuals, counseling techniques to use with multiracial individuals and about social acceptance with multiracial individuals (e.g., Gaither et al., 2014; Henriksen & Maxwell, 2016; Guy, 2018) But according to Williams (2011), the research about multicultural education really does not address the fact that some students do not fit perfectly into just one racial category. This is true for multiracial students, which makes it important to figure out how the fact that they do not fit into one racial category impacts their educational outcomes. This study will further contribute to practice because it will analyze how multiracial individuals’ racial identity may impact their opinions and beliefs about their own academic abilities. This is called academic self-concept and it can be affected by the student-teacher relationship and family expectations. If a student has a low academic self-concept, they are more likely to receive low grades in school and if they have a higher academic self-concept, they are more likely to receive high grades (Calero et al., 2014). The current study will also examine if there is a relationship between the level of academic self-concept for multiracial high school students and their academic achievement scores in English and Math. Therefore, the results of the current study can help parents of multiracial high school students be aware that their expectations for their children may impact how the student performs in those core subject areas. The study can also provide strategies to teachers to promote diversity and a culturally responsive teaching

atmosphere in their classroom as well as motivate teachers to build stronger relationships with their multiracial students to further increase the student's academic self-concept.

### **Summary**

An individual's self-concept is influenced by family academic expectations, peer relationships, schoolwork, and student-teacher relationships (Calero et al., 2014). Multiracial individuals are beginning to be included more in curriculum in schools and there is a slowly growing number of books that tell stories about diverse individuals (Kato, 2000). Those teachers who encourage multiculturalism in their classroom have a better chance of creating stronger relationships with their students (Hopkins, 2009). Family academic expectations may vary in a multiracial family because different races or ethnicities may have conflicting views on education, which could also cause a conflict for the student who is multiracial. In turn, the higher a student's academic self-concept the more likely they are to achieve high in academics (Calero et al., 2014). In the current study, there are two central goals. First, the researcher examined if racial identity predicts academic self-concept in multiracial/biracial high school students. Second, the researcher explored if the level of academic self-concept mediates the relationship between multiracial/biracial students' racial identity and their academic achievement scores in English and Math. The Intersectionality theory says that people have multiple social identities and they all come together to influence how they experience situations. The different social identities that a person has can either create disadvantages for the individual or advantages, according to the Intersectionality theory (Gopaldas, 2013). The Intersectionality theory can be used to look at the multiple social identities of race for a multiracial individual and how it impacts their educational experience. Overall, the current study will contribute to not only the growing body of research on multiracial students, but it will also contribute to research about

academic self-concept because, to the researcher's knowledge, there has not been a study focused on this subject in relation to multiracial/biracial high school students.

## CHAPTER 2: REVIEW OF THE LITERATURE

The population of multiracial children and adolescents in the United States is continuing to grow rapidly. Since 2010, the population of multiracial children and adolescents has increased by 32% (Humes, Jones, & Ramirez, 2011). Multiracial youth and their families may experience distinctive types of discrimination and microaggressions. Microaggressions are defined as, “a comment or action that subtly and often unconsciously or unintentionally expresses a prejudiced attitude toward a member of a marginalized group” (Merriam-Webster, 2019). For instance, multiracial people may experience microaggressions through being excluded or isolated. An example could be family members who are monoracial not treating the multiracial individual as equal to other family members who are also monoracial. Another example could be observed when monoracial individuals make a comment or joke about another race around a multiracial person not realizing that the multiracial individual is of the race that the joke or comment was about (Johnston & Nadal, 2010). These types of microaggressions could really affect the multiracial individual’s overall well-being.

It is also important to recognize all the possible identities of a multiracial individual because multiracial individuals’ racial identity could be on a continuum. Rockquemore and Laszloffy (2005), created a continuum of biracial identity model to describe how biracial individuals choose their racial identity. This model that they created, does not try to categorize individuals into a single identity but instead acknowledges that biracial individuals’ racial identity could be on a continuum. Some biracial people may choose to identify singularly with only one of their races, some may blend with a primary emphasis on one race and a secondary emphasis on the other, and some may blend two (or more) races with equal emphasis (Rockquemore & Laszloffy, 2005). With this said, biracial or multiracial individuals may also



experience institutional discrimination, specifically in school systems. There are many schools that may not allow a student to mark more than one race when filling out paperwork about their race (Renn, 2009). This could potentially create a feeling of no control because the biracial individual is not able to properly self-identify, which in turn can affect their mental health (Sanchez, 2010).

Another type of institutional discrimination that biracial individuals may experience is stereotype threat, which is a social-psychological phenomenon that may arise from a known negative stereotype about an individual's group. The existence of that stereotype causes the individual to do things or portray features that conform to the stereotypes and making the stereotype truer in the eyes of others and possibly in one's own eyes (Steele & Aronson, 1995). Stereotype threat can cause poor performance on tasks (i.e., academics). However, multiracial individuals are less likely to be subject to this kind of institutional discrimination because of their resiliency (Shih, Bonam, Sanchez & Peck, 2007). Shih and Sanchez (2009) found that their resiliency against stereotype threat is because multiracial individuals have increased appreciation and empathy for cultural diversity, among others. Overall, being more than one race can affect an individual in multiple ways.

### **Racial Identity and Academic Achievement**

Researchers hold a variety of views about the nature of the relationship between racial identity and academic achievement. For instance, a study focusing on Chinese, European Americans, and Mexican children, found that the ethnic identity that the students chose was uncorrelated with their academic achievement (Fuligini, Witkow & Garcia, 2005). However, there are also bodies of research that support that there is a relationship between racial/ethnic identity and academic achievement. Harper (2007) found that when an individual identifies with

a minority group it can have a negative impact on their academic achievement because of the negative views in society that pertain to that group of people. In addition, for African American students, the school setting may evoke a fear of being stereotyped or a fear that they are not valued. This in turn can increase the risk of educational failure (Boston & Warren, 2017).

There has also been a lack of understanding about how belonging to a group can impact academic achievement of diverse students (Faircloth & Hamm, 2005). For instance, close association with a certain racial/ethnic identity will allow for higher levels of academic achievement (Mulzac, 2011). Strongly associating with a race/ethnic identity can provide a sense of belonging and pride for an individual and help in buffering against life stressors (Ponterotto & Park-Taylor, 2007). For example, if a child is in the foster care system and may not have the resources, they believe they need to succeed academically, but they heavily identify with a race and have a lot of friends that are of that race at school, they may feel like they belong and have a support system and therefore be able to succeed academically. For African American students having a positive racial identity attitude, particularly internalization, can be associated with positive outcomes for them, in respect to academic achievement (Hughes, Manns, & Ford, 2009). Examples of an internalized racial identity attitude could be Afrocentricity or a Multiculturalist attitude. Afrocentricity is when an African American individual immerses themselves in the African American culture and a multiculturalist attitude is when an individual connects with multiple cultures and groups (Hughes, Manns, & Ford, 2009). The two internalized racial identity attitudes described illustrate how when individuals feel like they belong to a certain culture, race, or group, it will result in positive academic achievement results.

### **Racial Identity and Academic Self-Concept**

Previous research has focused on the racial identity development of people of color as well as white people. However, African American individuals' racial identity development has been heavily focused upon in research. Ethnic identity or racial identity is a positive significant correlate of academic self-efficacy (Smith, Walker, Fields, Brockins & Seay, 1999). Internalized racial identity attitudes are acquired towards the end of the racial identity developmental process for African American individuals, but it is significantly related to self-concept (Wilson & Constantine, 1999). First, African Americans are in the pre-encounter stage, where they absorb beliefs and values of the dominate white culture and deemphasize their racial group (Cross, 1971; Cross, 1991). It has been found that there is a significant negative relationship between self-concept and being in the pre-encounter phase (Wilson & Constantine, 1999). The next stage in the racial identity development process for African Americans is the encounter stage. This is the stage where the individual may be forced to focus on their identity as a member of a group targeted by racism due to an act of racism (Cross, 1971; Cross, 1991). Self-concept and the encounter stage have a negative relationship, meaning the more the individual believes they are a member of a targeted group the lower their self-concept will be (Wilson & Constantine, 1999). The next stage is the immersion/emersion stage of racial identity development. This is when an individual actively seeks out opportunities to explore the characteristics of their own culture with the support of peers in their racial group (Cross, 1971; Cross, 1991). The immersion/emersion stage was not found to be significantly related to African American college students' self-concept (Wilson & Constantine, 1999). Finally, the last stage of the racial identity development process for African Americans is internalization, which is when the individual is secure in their racial identity. This significant relationship between the internalization racial identity attitude

and self-concept is due to what Spencer and Dowden (2014) found, in which students who identify strongly with their ethnic group are better able to negotiate potentially negative environmental factors, deal with discrimination, and have higher self-esteem.

The development of academic self-concept is affected by culture and identity (Cokley, 2000). The social identity theory states that self-concept develops from the knowledge and feelings about being a member in a social group and it also comes from the importance that is ascribed to the membership in that group (Tajfel, 1978). When an individual positively identifies with a social group it can strengthen and reaffirm their self-concept, if the group is important and affirmed in some of the individual's life domains (Ellemers, Spears & Doosje, 2003). Fuligini et al., (2005) found that when an individual strongly identified with their racial group and felt positively about their racial group there was a positive correlation with their attitude towards school regardless of the emphasis their racial group placed on education. When relating social identity theory back to race and culture, it is also important to discuss racial centrality because this concept explains how an individual sees their racial group in various situations. Racial centrality refers to the dominance of someone's race to their perception of self-concept. Centrality is known to be consistent across situations, so it is measured by an individual's perception of self, regarding race across various situations (Boston & Warren, 2017). In other words, how much of an impact does identifying with a certain race impact their self-concept. For African American males, when they reported high levels of racial centrality, which means they felt being African American was the main influence on their self-concept, it buffered the harmful effects of class discrimination on their academic self-concept (Chavous, Rivas-Drake, Smalls, Griffin & Cogburn, 2008). However, in another study, when African American male and female middle school students who supported race related academic competence stereotypes

had high racial centrality, they were more likely to report lower academic self-concept (Okeke, Howard, Kurtz-Costes & Rowley, 2009).

### **Academic Self-Concept and Academic Achievement**

There has been contrasting evidence in previous research about the direction of the relationship between academic self-concept and academic achievement. Cokley (2000), found that academic self-concept is a predictor of academic achievement. However, Marsh and Yeung (1997), found that past academic achievement influences further self-concept. On the other hand, there has been research to support that there is a reciprocal effect between academic achievement and academic self-concept. Self-concept can be both a cause and effect of academic achievement (Marsh & Craven, 2006). Due to the varying views about the direction of the relationship between academic self-concept and academic achievement, there are three main theoretical models that illustrate the direction of the relationship. The first model is the self-enhancement model, which says that self-concept is the key determinant of academic achievement. It supports that increased self-concept in a specific domain promotes higher academic achievement in that same domain. The second model is the skill development model, which demonstrates that academic achievement is the key determinant of academic self-concept. The skill development model also says that self-concept is a function of academic achievement, which means that enhancing self-concept would not affect academic achievement. Lastly, there is the reciprocal effects model that says that both academic achievement and self-concept are mutually reinforcing, gains in one would result in gains in the other (Marsh & Martin, 2011).

The direction and the strength of the association between academic self-concept and academic achievement can also vary depending on certain factors. Guay, Marsh, & Bolvin, (2003), found that the change of direction in the relationship between academic self-concept and

academic achievement, depends on the age of the individual. While it can also be argued that the strength of the association between the two variables and the direction of the causality depends on the stability of the individual's academic self-concept (Ehm, Hasselhorn, & Schmiedek, 2019). For instance, in elementary school academic self-concept is less stable because it is less influenced by wishful thinking and the children can use social comparison to distinguish between ability and effort (Nicholls, 1978). While in secondary school, self-concept is more stable for children (Ehm et al., 2019).

Self-concept of ability plays an important role in motivating achievement overtime and across achievement levels. Children's beliefs about their academic abilities in math and reading play a role in increasing achievement in each of those domains from early childhood until adolescence. Not only does this extend to those children who are achieving in the top levels, but it also applies to those at different achievement levels. The link between self-concept and achievement may be stronger for students who are at the lower level of achievement distribution with math and reading because their beliefs about their abilities act as a positive factor for motivating them to achieve in academic domains (Susperreguy, Davis-Kean, Duckworth, & Chen, 2018).

### **The Present Study**

It is evident that there is an abundance of research regarding racial identity and its relation to academic achievement and academic self-concept. There is also much literature to support that there is a correlation between academic self-concept and academic achievement. However, there is a lack of research regarding all three of these factors, racial identity, academic self-concept, and academic achievement, in respects to a population of biracial students. Previous research has focused on students who are only one sole race and particularly much

literature focuses on racial identity with people of color, mostly African Americans. The link between academic self-concept and academic achievement has been investigated in mostly African American populations. But the link between those two variables has also been investigated in European Americans, Asians, and students in Spain (Cokley, Komarraju, King, Cunningham, & Muhammad, 2003; Cokley & Patel, 2007; Sanchez & Roda, 2003) Therefore, the current study investigated the relationship between racial identity, academic self-concept, and academic achievement scores on the Woodcock-Johnson Psycho-educational Battery – Revised (WJ-R) within a population of biracial high school students. To assist in addressing the holes in the literature, the following two research questions are given.

1. When controlling for the student's mother's education background and their mother's total income after birth, what is the nature of the relationship between the racial identity of biracial students and their level of academic self-concept in English and Math?
2. Does the level of academic self-concept for biracial students mediate the relationship between racial identity and academic achievement scores on the Woodcock-Johnson Psycho-educational Battery – Revised (WJ-R) when controlling for their mother's education background and their mother's total income after birth?

## CHAPTER 3: METHODOLOGY

### **Participants**

Data from the National Institute of Child Health and Development's (NICHD) Study of Early Child Care and Youth Development (SECCYD) was utilized for the current study. In 1991, when the SECCYD first began it was known as the Study of Early Child Care. The study was started to answer questions about the relationships between child-care experiences, child-care characteristics, and children's developmental outcomes. There were four phases of the SECCYD. Phase I followed 1,364 children from the age of zero to three years old and lasted from 1991 to 1994. In Phase II 1,226 children participated in the study from the age of four years old until first grade. Phase II data was collected from 1995 to 1999. Phase III data was collected from 2000 to 2004 and included information about 1,061 children from second grade through sixth grade. Lastly, the data in Phase IV was collected during 2005 to 2007. Only 1,009 children participated in Phase IV and the data was collected from seventh grade until high school. In the current study, only data from Phase I, Phase III and Phase IV was used.

In the current study only data for high school students who are biracial, either African American and European mixed (Table 1) or European and Latina mixed, was utilized (Table 2).



Table 1  
*Sample Distribution for African American and European Mixed Students*

	Frequency	Percentage
Sex		
Female	27.0	46.5
Male	31.0	53.4
Mother's Education Background		
Completed 9 <sup>th</sup> grade	2.0	3.4
Completed 10 <sup>th</sup> grade	1.0	1.7
Completed 11 <sup>th</sup> grade	11.0	18.9
High School Diploma	15.0	25.8
Associates Degree	24.0	41.4
Bachelor's Degree	4.0	6.9
Doctorate or equivalent	1.0	1.7
Mother's Total Yearly Income After Giving Birth		
Did not report	5.0	8.6
\$2,500-7,500	21.0	36.2
\$10,000-15,000	16.0	27.6
\$17,500-27,500	9.0	15.5
\$30,000-37,500	5.0	8.6
\$45,000	1.0	1.7
\$200,000	1.0	1.7

<sup>a</sup> n= 58.

Table 2  
*Sample Distribution for European and Latina Mixed Students*

	Frequency	Percentage
Sex		
Female	27.0	45.0
Male	33.0	55.0
Mother's Education Background		
Completed 8 <sup>th</sup> grade	2.0	3.3
Completed 10 <sup>th</sup> grade	1.0	1.6
Completed 11 <sup>th</sup> grade	2.0	3.3
High School Diploma	16.0	26.6
Associates Degree	25.0	41.6
Bachelor's Degree	8.0	13.3
Doctorate or Equivalent	6.0	10.0
Mother's Total Yearly Income After Giving Birth		
Did Not Report	4.0	6.6
\$2,500-7,500	10.0	16.6
\$10,000-15,000	6.0	10.0
\$17,500-27,500	11.0	18.3
\$30,000-37,500	8.0	13.3
\$40,000-47,500	7.0	11.6
\$50,000-55,000	3.0	5.0
\$65,000-67,500	2.0	3.3
\$75,000-87,500	2.0	3.3
\$95,000	2.0	3.3
\$117,500-125,000	3.0	5.0
\$150,000-160,000	2.0	3.3

<sup>a</sup> n= 60.

## **Instruments**

### **One Month Interview**

The one-month interview was administered to the mothers of the children at home, when the child was one month old. This data was collected during Phase I. Each interviewer was provided with specific instructions for a smooth progression of the interview. All the mother's responses were coded and recorded on forms. Within both sections of the interview, there were several choices when the interviewer had to skip over questions or sets of questions because they were not relevant to a situation. Section one of the one month interview included questions about Household data (i.e., baby's gender, birth order, mother's age, ethnicity, father information, and a household chart about the baby's environment), health (i.e., mother's description of overall health, any serious or chronic problems, baby's health, and number of medical visits) and father/partner employment (i.e., financial support from father, job title, occupation, and level of education). Section two included: O. There was not any psychometric information provided for this measure. For the current study only, certain variables were utilized from this measure, mother's education, child's gender, and total income after child.

### **Family Ethnicity and Cultural Background**

My Family's Cultural Background is a questionnaire designed to measure the child's family cultural background. This questionnaire was developed for the use in the NICHD study. Some of this questionnaire was adapted from the Generations measure made by Deborah Johnson (Johnson & Chung, 1995). The data for this measure was collected inside of a lab by the mothers, when the children were in fourth grade. The mothers were asked to report on their own ethnic heritage and the father's ethnic heritage. They were to choose from six major categories (European, Asian, Middle Eastern, Latina, African, American Indian) with several

subcategories under each. The mothers were also asked which cultural heritage they most identify with, if either parent immigrated to the United States and if they did when, the language the parent uses every day, and the ethnic composition of the neighborhood in which the family lives in. However, for the current study only the variables that describe the mother's and father's ethnic heritage were utilized from this measure.

### **Ethnic Preference and Identity**

The Ethnic Preference and Identity Measure (EPI) was used as the sole measure of children's ethnic preference and ethnic salience (Johnson & Castillo, 1994). It is a self-report measure of the child's ethnic identity that assess ethnic/racial preference and ethnic race salience, that produces four scores. The data for this measure was collected in a lab when the child was in the third grade. The EPI includes four basic tasks, Task I and III are racial salience tasks that add to a child's ethnic and racial awareness and Task II and IV focus on the child's ethnic preferences. In addition, there are three additional questions that assist in obtaining the ethnic identity of the child, (e.g., Presenting a picture of the participant and asking, "who is this a picture of?" "what race are you?" and "what color are you?"). However, for this study only the measurement of ethnic identity was used. The ethnic identity variable was measured in a lab when the child was in third grade. The child was the participant for this measure. The EPI was developed to be used in the NICHD study to measure racial identity for children of at least 4 or 5 major racial/ethnic groups. Racial Self Identification was created from responses to the questions, "what race are you?" and "what color are you?" The questions were developed to figure out whether the child can describe him/herself in racial terms and at what level they do so. Racial Self-Identification responses are classified as 0= "no use of race or color terms", 1= "minimal use of race and color terms", 2= "moderate use of race and color terms", and 3=

“Sophisticated use of race and ethnic terms”. No validity or reliability information was provided on the additional questions added to the measure.

### **Achievement Motivation, Efficacy, and Educational Aspirations**

How I Do in School is a 19-item instrument. This instrument adopted many items from other work and questionnaires. For instance, three items were taken from the work of Cook et.al, (1996), that concern adolescent’s beliefs about their educational attainment. Fifteen used from the Self and Task Perception Questionnaire (Jacobs et al., 2002) and measure the child’s beliefs about their abilities in math (5 items), English or reading (5 items), and sports (5 items). Each of those 15 items are rated on a 7-point Likert scale from 1= “Not at all Good” to 7= “Very Good”. The final item on the instrument asks adolescents for their opinions about the importance of academics compared to sports. This instrument was administered at the child’s home when they were 15 years old. For the current study, only the self-concept in English and self-concept in math variable was utilized. The self-concept of ability in Math is determined by taking the mean of items 4-8 on the instrument and the self-concept of ability in English was calculated by taking the mean of items 9-13. Both self-concept possible scores range from 1 to 7, with a higher score meaning the child has a more positive self-concept of ability in math or English. The alphas for the English/reading and the math items on the instrument were .83 and .84.

### **Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R)**

The Woodcock-Johnson Psycho-educational Battery- Revised (WJ-R) is a wide range, comprehensive set of individually administered tests. The reason for administering this battery is to obtain an assessment of the child’s cognitive aptitude and achievement. The WJ-R consists of two major parts: The Test of Cognitive Ability (WJ-R COG) and the Tests of Achievement (WJ-R ACH) (Woodcock & Johnson, 1989; Woodcock, 1990). The data for this measurement was

collected in a lab when the child was 15 years old. At this age, Cognitive ability was assessed in two subscales, Picture Vocabulary (Section 6) and Verbal Analogies (Section 21) and Achievement was assessed in two subscales, Passage Comprehension (Section 23) and Applied Problems (Section 25). The test items are arranged in order of difficulty, with the easiest items presented first and the most difficult ones presented last. Therefore, this means that several items in each test will be beyond the child's operating range. For the current study only the Passage Comprehension and Applied Problems scores were utilized. The Passage Comprehension subtest measured a student's understanding of written text. The initial items measured the student's ability to match a rebus (picture symbol) with an actual picture. The following set of items required the students to match a short phrase to the appropriate picture when given three choices. But majority of the items required the students to supply a missing word to sentences and then paragraphs of increasing complexity. The Applied Problems subtest measured a student's ability to analyze and solve math problems. The first group of items required application of simple number concept and the remaining items required a student to listen to the problem, recognize the mathematical procedure that must be followed, and perform the appropriate calculations. Each item on the test was given a 1 if it is correct and a 0 if it is incorrect. To score the subtests a scoring software was used. It automatically scored the data once the raw scores and subject information were entered on the Data Entry screens. The norms based on age were used to calculate the standard scores. The standard scores are based on a mean of 100 and a standard deviation of 15. To measure reliability, internal coefficients are in the mid-.90s for the overall clusters. While validity correlations are in the .60 to .70 range when compared to other cognitive abilities or achievement tests.

## Analysis

One structural equation model, with two groups, was used to investigate the influence of biracial students' racial identity on their level of academic self-concept in English and Math and whether the level of academic self-concept for biracial students mediated the relationship between racial identity and academic achievement scores on the Woodcock-Johnson Psycho-educational Battery – Revised (WJ-R). The same models were used for both the African American and European mixed sample and the Latina and European mixed sample of children, to compare the two samples. To investigate the two research questions, mother's education and total income after child were background variables, racial identity was the independent variable, the standard scores for the Applied Problems subtest and the Passage Comprehension subtest on the Woodcock-Johnson Psycho-educational Battery- Revised (WJ-R) were dependent variables, and Math Self-concept and English self-concept served as mediators. Paths were estimated from each of the background variables to the independent variable, the mediators, and the dependent variables. Paths were also estimated from the independent variable to each mediator and the independent variable to each dependent variable. In addition, to determine if English self-concept and Math self-concept mediated the effect of racial identity on the two dependent variables, paths were estimated from each of the mediators to each dependent variable. An error variance was added to the independent variable (racial identity), the mediators (English self-concept and Math self-concept), and the dependent variables (the Applied Problems subtest standard score and the Passage Comprehension subtest standard score). In addition, the error variances of WJ-R Applied Problems and WJ-R Passage comprehension subtest were allowed to correlate and the error variances of academic self-concept for Math and academic self-concept for English were also allowed to correlate. Lastly, the background variables, total income after

child and mother's education, were allowed to covary. Model fit was assessed with the comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean-square error of approximation (RMSEA) where values of .95 and above indicate good fit and values .90 to .95 indicate adequate fit for the CFI and TLI, values of .5 or less will indicate good model fit and values of .05-.10 will indicate fair fit for the RMSEA. Model comparisons were evaluated using  $\Delta \chi^2$ .

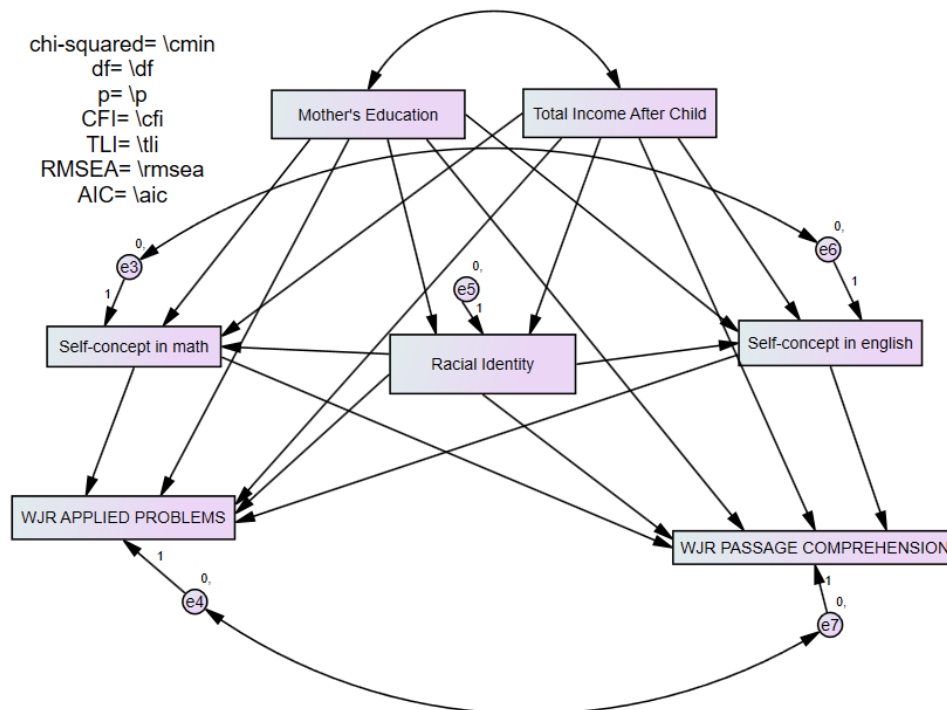


## CHAPTER 4: RESULTS

An unconstrained model, with two groups divided by race, Black and White biracial students, and Latin and White biracial students, was produced and analyzed. The unconstrained model was just-identified. To test if the results were significantly different between the two groups and to see if race was a moderator, paths between independent and dependent variables, independent variables to mediators, and mediators to dependent variables, were individually constrained to be equal between the Black and White biracial students and Latin and White biracial students. No significant changes in chi-square were noted for any paths towards WJ-R Applied Problems or WJ-R Passage Comprehension when paths were constrained to be equal for both racial groups. In addition, no paths between Racial identity and academic self-concept in math or English resulted in a significant increase in chi-squared when constrained to be equal for Black and White biracial students and Latin and White biracial students.

A model based off of the aforementioned path moderation analyses was estimated wherein paths from racial identity to WJ-R Applied Problems and WJ-R Passage comprehension, paths from racial identity to academic self-concept in Math and academic self-concept in English, paths from academic self-concept in Math to WJ-R Applied Problems and WJ-R Passage comprehension and paths from academic self-concept in English to WJ-R Applied Problems and WJ-R Passage comprehension were constrained to be equal for Black and White biracial students and Latin and White biracial students. In this model, any paths coming from the background variables were not constrained and were free to vary across racial group. This model fit the data well (CFI= 1.00; TLI= 1.44; RMSEA= .001) and revealed that race does not moderate the relation between racial identity and academic achievement or academic self-

concept and does not moderate the relation between academic self-concept and academic achievement. The model analyzed is found in Figure 1.



*Figure 1.* Just-identified model of the relation between racial identity, self-concept in math and english, and scores on the WJ-R applied problems and passage comprehension subtests (figure created in AMOS version 26).

The results of the just-identified model shown in Figure 1, with all paths constrained determined that for both racial groups of students there was not any significant relationships among variables. For Black and White biracial students, racial identity does not have a significant effect on their level of academic self-concept in English ( $\beta = -.064$ ,  $p = .450$ ) or Math ( $\beta = -.036$ ,  $p = .711$ ). Similarly, since it was indicated that there is not a significant difference between racial groups of students, racial identity also does not have a significant effect on Latin and White biracial high school students' academic self-concept in English ( $\beta = -.082$ ,  $p = .450$ ) or Math ( $\beta = -.035$ ,  $p = .711$ ). It can be concluded that the level of academic self-concept in English

and Math for both racial groups of high school students does not mediate the relationship between racial identity and their scores on the WJ-R Passage Comprehension or WJ-R Applied Problems subtest due to their not being a significant relationship between racial identity and academic self-concept in English or Math for both high school student samples. Path coefficients for the background variables and independent variable in the just-identified paths constrained model for Black and White biracial high school students are presented in Table 3 and Latin and White biracial high school students' data is presented in Table 4. Path coefficients between the mediator variables and dependent variables are presented in Table 5 for both Black and White biracial high school students and Latin and White biracial high school students. Although the path coefficients are presented in separate tables for each racial group, race is not a moderator for any relationships between variables and therefore there is not a significant difference between the Black and White biracial students and Latin and White biracial students.

Table 3  
*Standardized Path Coefficients of Background Variables and Racial Identity for Black and White Biracial Students*

Variable	Academic Self-Concept		WJ-R Subtest Score	
	Math	English	Applied Problems	Passage Comprehension
Mother's Education	.021	-.104	.005	.063
Total Income After Child	-.151	.195	.009	.012
Racial Identity	-.036	-.064	.038	-.108

\*p<.05

Table 4

*Standardized Path Coefficients of Background Variables and Racial Identity for Latin and White Biracial Students*

Variable	Academic Self-Concept		WJ-R Subtest Score	
	Math	English	Applied Problems	Passage Comprehension
Mother's Education	.139	.051	.255	.242
Total Income After Child	-.305	-.180*	.195	.106
Racial Identity	-.035	-.082	.035	-.131

\*p<.05

Table 5

*Standardized Path Coefficients Between Mediator Variables and Dependent Variables*

Variable	Black and White Biracial Students		Latin and White Biracial Students	
	WJ-R Applied Problems	WJ-R Passage Comprehension	WJ-R Applied Problems	WJ-R Passage Comprehension
Academic Self-Concept in Math	.193	.048	.183	.060
Academic Self-Concept in English	-.010	-.126	-.007	-.121

## CHAPTER 5: DISCUSSION

The purpose of the present study was to explore the relationship between the racial identity of biracial students in third grade and whether it had any significant effect on their academic self-concept in math and English when they were 15 years old. In addition, this study sought to investigate if the level of academic self-concept for biracial students mediated any relationship between racial identity and academic achievement scores on the Woodcock-Johnson Psycho-educational Battery – Revised (WJ-R) Passage Comprehension subtest and Applied Problems subtest. Studying the relationships between the mentioned three variables is especially important to develop a better understanding of biracial students' identity development and how it may have an impact on their educational experience. After analyzing the data, it can be concluded that when controlling for the mother's education level and total income after giving birth to their child, racial identity of biracial students in third grade does not have a significant effect on academic self-concept in English or Math for Black and White biracial high school students and Latin and White biracial high school students. For both groups of biracial students, whether a student racially identified using no racial terms or moderate to sophisticated race/color terms in third grade, it does not impact their belief in their academic achievement capabilities in English or Math when they are 15 years old in high school. There was not statistically significant evidence that academic self-concept for Math or English acts as a mediator for the relationship between racial identity in third grade and academic achievement scores on the WJ-R Passage Comprehension and Applied Problems subtest when the students were 15-years old. These insignificant results were consistent among both groups. Lastly, it was also determined that race did not act as a moderator for any relationships between variables. In other words, this

means that it did not make a significant difference if the student was a Black and White biracial student or a Latin and White biracial student.

Although there were not any clinically significant results in the current study, it was expected that there would be some significant relationships among the variables. Previous research focused on African Americans and the relation between their racial identity and academics. Boston & Warren (2017) found that African American students who identified strongly with their race had fears of being stereotyped or not valued because of their race and it further led to educational failure. Therefore, particularly in the Black and White biracial high school student population in the current study it was hypothesized that there may be a negative relationship between racial identity and academic achievement. However, the current study did not focus on what race the students identified as but more so how they described their racial identity, which resulted in insignificant results. For instance, using certain terms that were more specific and mature or describing their race in relation to the color of their skin. Even though there were insignificant results in the current study it did result in a similarity with previous research done by Fuligini et al., (2005). In this previous study it was found that racial or ethnic identity was uncorrelated with academic achievement, which is consistent with the results from the current study, in which a significant relationship was not found between racial identity and academic achievement measures among both groups in the sample of biracial high school students.

The relationship between racial identity and academic self-concept was also found to be insignificant in the current study. This is contradictory to previous research in which it has been found that our self-concept is derived from our feelings about being a member in a social group (i.e., racial group) (Tajfel, 1978). According to previous research, an individual's development

of their self-concept is affected by their culture and their identity (Cokley, 2000). In addition, an individual's overall self-concept can either be positively or negatively affected depending on if the group that they identify with is affirmed in the domain being studied (Ellemers et al., 2003; Okeke et al., 2009). Due to this previous research, it was assumed that there would be a relationship between racial identity and academic self-concept, but a significant relationship between the two variables was not found in the current study.

The self-enhancement model states that a higher academic self-concept leads to an increase in academic achievement (Marsh & Martin, 2011). In other words, if an individual has low academic self-concept then their academic achievement scores will be lower and vice versa. Therefore, the researcher in the current study anticipated that there would be a positive relationship between academic self-concept in math or English and the scores on the WJ-R Passage Comprehension and Applied Problems subtests. However, the reason why in the current study a significant relationship was not found between the two variables, could be due to the level of academic achievement among this sample of biracial high school students. Susperreguy et al., (2018) discovered that when an individual is on the lower end of academic achievement, the link between academic self-concept and academic achievement is stronger in math and reading. This is because those individuals who are at the lower end of the academic achievement scale tend to have more motivation to achieve higher and those who are already achieving at the high end do not have much more to strive for (Susperreguy et al., 2018). Therefore, the sample used in the current study may have had more individuals who were in the higher end of the academic achievement scale and therefore, this could be why the link between academic self-concept and academic achievement was weak or insignificant.

Overall, the current study did have some limitations. The first factor that may have contributed to some of the insignificant results is that the relation between academic self-concept and academic achievement can change direction depending on the individual's age or depending on the academic achievement domain that is being investigated (Ehm et al., 2019). Due to this factor, future research may want to consider altering the structural equation model that was analyzed in the current study and analyze a model in which there was a path from the WJ-R subtests towards academic self-concept in English and Math, instead of the other way around. Due to previous research on the relationship between academic self-concept and academic achievement, future research in this area may want to gather data on students' past academic achievement to determine its relation to academic self-concept. This is recommended because previous research has demonstrated that past academic achievement influences further self-concept (Marsh & Yeung, 1997). It would also be important to consider other areas of academic achievement instead of just looking at areas in English and Math because a significant relation may exist between academic self-concept and academic achievement in other academic subjects. Additionally, the two subtests from the WJ-R that were used to measure academic achievement, were only a measure of some skills utilized in Math and Reading/English. Future research in this area, should consider a more accurate average measure of the student's overall academic achievement in Math and Reading/English, like their overall grade in that subject in the classroom.

Age is an important limitation of the current study as aforementioned because the strength and direction of the association between academic self-concept and academic achievement depends on the stability of an individual's self-concept (Ehm et al., 2019). In the current study, academic self-concept was measured when the students were 15 years old.



Previous research has provided information about the impact of age on academic self-concept, stating that in elementary school academic self-concept is more influenced by wishful thinking and social comparisons, while in secondary schools, academic self-concept becomes more stable (Ehm et al., 2019). Future research may want to address the age factor by measuring academic self-concept while in elementary school rather than in high school. In addition, the current study measured racial identity when the students were in 3<sup>rd</sup> grade and their racial identity development process is an ongoing thing that may have not been fully understood. In the current study, sophisticated or moderate racial terms or lack thereof, are usually indicators of learning exposure and development, both factors that change with age. Since racial identity was measured in 3<sup>rd</sup> grade but the students' academic self-concept and academic achievement was measured approximately 7 years later, at 15 years old, an age effect could have resulted in the insignificant results produced in the current study. If future research occurs it would be key to account for age at the time data is being collected for all variables.

Furthermore, regarding the sample of students that were used in this current study, it would be interesting to see if other biracial students of different racial mixes have the same results or different and it would also be beneficial to compare biracial students to monoracial students in future research. In addition, because the data used in the current study was collected from 1991 until 2007, there is a chance that the data is outdated and some of the findings could be different if the study were done again using more updated data. Future research should consider this to account for how society has been evolving over the years regarding diversity, racism, and other world events that may have occurred since the ending of the data collection for the current study in 2007.

Even with limitations to the current study, there is considerable importance that this research holds. This current study particularly focused on academic achievement in two core areas of education, English and Math, which can be a strength of the study because it had a narrow focus instead of focusing on overall academic achievement. Allowing for a narrow focus for the purpose of the study, resulted in findings in a specific subject. This was done in the design of the study to ensure that educators would be able to apply the findings to their Black and White biracial students and their Latin and White biracial students in the two core subjects in school. Although the findings were insignificant and it cannot generalize to all biracial high school students, the findings can assist educators, parents, and families to understand that racial identity may not impact academic achievement in English and Math. The fact that racial identity did not have a significant effect on any of the variables within this sample of students, shows that how a child racially identifies, does not play a significant role in the educational experiences of some biracial students. In conclusion, the findings from the current study can allow for important individuals in a biracial child's life to understand the educational experiences of these unique and diverse students and better serve them so they can achieve educational success.

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