

A Genetic Point of View:  
The Effects of Ancestry Testing on Racial and Ethnic Identities

By

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Submitted to the graduate degree program in Sociology and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Master of Arts.

Date Defended: 18 April 2019

The thesis committee for John Kaiser certifies that this is the approved version of the following thesis:

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Date Approved: 18 April 2019

## ABSTRACT

*The purpose of this research is to investigate how genetic ancestry tests can affect personal identity. Forty individuals from the cities of Topeka, Kansas City, and Lawrence who identified as primarily Black, White, or Hispanic were interviewed before and after taking a commercially-available ancestry test. The findings of this study suggest that participants selectively chose certain results to incorporate into their identity rather than accepting the entire test. Group membership strongly indicated the reasons for why participants took the test and how they reacted to the results. White participants took these tests seeking new racial labels to differentiate themselves from simply being “White”. Black participants took these tests seeking to identify ancestral genetic narratives to better inform their Black identity. Hispanic individuals had more ambiguous reasons for taking the test, as some approached the test seeking new identities while others did so to acquire ancestral genetic narratives. White individuals incorporated certain test results into their identity to make them appear more diverse while Hispanics and Blacks subsumed certain results into their identity to better inform it.*

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## INTRODUCTION

The 21<sup>st</sup> century has seen a massive increase in the sales of commercially-available ancestry tests (Meloni 2014; Philips 2016; Forbes 2017; Concert Genetics 2017; MIT Technology Reviews 2018). Nearly 80 separate testing companies have arisen, claiming to be able to identify a person's ancestral lines (Philips 2016). This offer is enticing: more than 4 million people, or roughly 1 in 25 Americans, are estimated to have access to some form of their genetic information (Forbes 2017). This number only continues to grow, as more genetic testing kits were sold in 2017 than in all previous years combined (Concert Genetics 2017; MIT Technology Reviews 2018).

The advancement of genetic technology has allowed scientists to observe the molecular biology involved in genetics. Chief among these molecules is deoxyribonucleic acid, or DNA, the biological blueprint from which human beings are built (U.S. National Library of Medicine 2018). The DNA molecule serves as an instruction manual for the body, containing material that plays a key role in determining an individual's characteristics and physical traits.

With advancing technology, scientists have been able to identify the effects that specific sections of this genetic code have on a person's appearance, health and behavior. DNA is inherited from parent to offspring, with half coming from the father and half coming from the mother. As such, specific DNA frequencies can be traced back thousands of years, providing individuals with not only an understanding of their personal traits, but also their ancestral origins (Chao 2013; Frank 2015; Scully et al. 2016; Merz 2016).

The increased popularity of these tests raises concerns about the essentializing influence they can exert on the sociological construction of race (Duster 2005; Morning 2014). There are fears that the rise in genetic ancestry tests will lead to a larger focus on essentialized, or biologically-rooted, conceptualizations of race and create “essentialized identities”, identities formed from genetic test results (Duster 2005; Nelson 2008, Chao et al. 2013). As seen through the lens of genetic determinism, the theory that genetic information controls an individual’s behavior, certain ancestral DNA patterns could easily be conflated with racial groups and thus essentialize identity (Shriver and Kittles 2004; Duster 2005; Byrd and Hughey 2015).

The goal of this study to investigate how ancestry tests affect the identities of consumers. With the increasing number of people who have taken genetic tests, the impact that these tests have on individual identity and race needs to be understood (Duster 2005; Nelson 2008; Roth and Ivermark 2018). This study took a concerted look at the effects of racial privilege and how the degree of racial privilege may affect a test-taker’s motivations and reasons for taking the test.

In order to investigate this question, forty participants belonging to three different racial or ethnic groups - White, Black, and Hispanic - with an interest in taking a genetic test were recruited from the cities of Lawrence, Topeka and Kansas City. Some individuals were recruited from genealogy societies and cultural organizations, such as a German heritage or Hispanic cultural society, whereas others were recruited through word of mouth. One participant was a member of my immediate family. This was done so that I could have a better understanding of the process participants and members of their family go through by examining the effect the test had on my family. Although the

actual test results may vary due to genetic mechanisms, specifically through DNA recombination, this would offer me the opportunity to learn more about the social processes test-takers and their family members go through.

Among the participants interviewed, half were individuals with higher racial privilege (White) while the other half were individuals with less racial privilege (Black and Hispanic). This determination was based on individuals' stated pre-test racial identification. Given the current racial construction of Western society, I defined the racially privileged group as those who identified as White, and, alternatively, European or Caucasian. Half of these participants were connected to a social group that had a vested interest in these tests. Such groups include genealogical societies and cultural organizations. Although individuals who belonged to these societies were grouped together for the purposes of this study, these two types of organizations are separate and distinct entities. Genealogical societies are social organizations that are interested in uncovering more information about members' genealogy and revel in this body of knowledge. Cultural organizations are communities that focus on a particular culture and revel in its identity, such as a Latino society or a German society. The other half of the White group was not directly affiliated with any of these organizations.

I defined the less racially privileged group as non-White participants who identified as either Black or Hispanic. The inclusion of Hispanic individuals in this study enabled me to explore the particularities of geneticized Hispanic identity. Since "Hispanic" is technically considered to be an ethnic category, a further distinction was made to divide the Hispanic group into White Hispanics and Black Hispanics. This was done in order to ascertain the possible impact of ancestry testing on different levels of

racial privilege within the Hispanic ethnic group. I also have a personal interest in Hispanic identity, as I am a White Hispanic. Asian, Native American, and Pacific Islander individuals were excluded from the study to make the group comparisons more manageable.

This paper relies on the “genetic options” theoretical framework proposed by Roth and Ivermark (2018), which argues that individuals do not simply accept geneticized identity but selectively choose certain genetic test results to incorporate into their pre-standing identity. By drawing from this theoretical framework, this project attempts to similarly address why individuals choose to take these tests and how they respond to the results along racial and ethnic lines. Roth and Ivermark’s study (2018) also suggests that racially-privileged individuals take these tests with the intention of presenting themselves as more “diverse” by acquiring new ethnic and racial labels. This finding is substantiated by other studies (Lee 2013; Scully, King and Brown 2013). Participants with higher racial privilege selectively choose certain labels that they can incorporate into their identity that optimize their distinctiveness while still maintaining their position of racial privilege. As validated through Brewer’s work on optimal distinctiveness (1981), these tests take on a particularly social element as consumers try to appear more diverse within the social groups to which they belong (Roth and Ivermark 2018).

Less racially-privileged respondents may approach these tests with different intentions, as their main motivations for taking the test were to connect themselves to a “genetic narrative”, a family history encoded into the genetic code, which had been lost due to historical events such as the slave trade (Sommer 2012). In doing so, these

individuals are searching for information to inform to their personal identity and heritage rather than to seek personal diversity per se (Sommer 2012). Unexpected results that are often incorporated into their identity, therefore, have less to do with trying to develop a unique and different identity and more to do with connecting to a lost past (Nelson 2008).

My research validates the work of both Nelson (2008), and Roth and Ivermark (2018), as the findings of this project suggest that the motivations for why test-takers take ancestry tests vary across racial lines. Racially-privileged participants are more interested in seeking out a test to reaffirm and diversify their racially-privileged identity. Furthermore, my research delves deeper into the question of why individuals with less racial privilege seek out ancestry tests,. The findings suggest that both Black and Hispanic test-takers are interested in connecting to a historical past in order to help develop their own personal identity, providing them with a sense of connection and knowledge about their past (Greenaway et al. 2015).

## LITERATURE REVIEW

### AIM for Accuracy: DNA and Genetic Testing

The field of genetics can be traced to the 19<sup>th</sup> century. In 1854, Gregor Mendel laid the scientific basis for how genetic information was passed from parent to offspring. This was accomplished by examining how traits were passed down across multiple generations of pea plants (1866). Throughout the rest of the 19<sup>th</sup> century and into the early 20<sup>th</sup> century, more research would be conducted into genetics, leading to the

realization that DNA is the molecule through which heritable traits are passed (Miescher 1871; Griffith 1918; Avery, MacLeod and McCarty 1944).

In 1953, a fully-fledged functional model of DNA was proposed by scientists James Watson and Francis Crick (1953). This model, shaped in the form of a double-helix, would become a scientific icon and representative of the genetic code (Watson and Crick 1953). DNA sequencing, or identification of this code, originally started in the early 1970s with Ray Wu (1972). Wu (1972) created a system that could identify specific genetic sequences. This method would be further developed by Frederick Sanger (1977), who created an enhanced method known as Sanger sequencing. This new discovery allowed scientists to visually see the genetic code, granting them the ability to quickly determine specific genetic sequences (Sanger, Nicklen and Coulson 1977). Advancing technology over the next several years would continue to hone the accuracy and efficiency of these tests (Skolnich and White 1982; Wilson et al. 1995).

In the 1980s, advances in technology led to the creation of microarrays, plates used to detect the presence of certain DNA frequencies (Bumgarner 2013). Attached to the plates are sequences of DNA that bind to DNA test samples. When a sample of test DNA is introduced to the plate, the microarray can attach itself to the specific sequences of interest to the researcher. Other sequences not of interest will simply wash off. Fluorescent tags are attached to the DNA in order to better visualize the bound DNA, allowing specific frequencies to be quickly identified. Around the time that microarrays began to rise in popularity, applications of DNA tests found their way into various fields outside of research. DNA tests found a special niche in criminal investigation and paternity testing (Wilson et al. 1995).

It was not until the turn of the century that genetic testing research emerged to the forefront of the public consciousness again with the development and success of the Human Genome Project. This monumental effort, which required billions of dollars, several decades, and over a thousand scientists to complete, culminated in the complete sequencing of an entire human genome in 2003 (Human Genome Project 2018). U.S. federal investment reached nearly \$3.8 billion dollars in funding for the project (Tripp and Grueber 2011; Human Genome Project 2018). The completion of this project led to a very interesting discovery. In a public address, President Bill Clinton stated that: “In genetic terms all human beings, regardless of race, are more than 99.9 percent the same” (White House 2000).

The success of the Human Genome Project kickstarted an entire industry (Philips 2015). For the rest of the decade, \$7.2 billion dollars were invested by the U.S. government into funding genetic research, producing countless jobs and technological advancements (Tripp and Grueber 2011). Despite this massive funding, the cost of engaging with genetic technology has dropped off dramatically: in the early 2000s, genetic tests could cost upwards of \$900 (Bolnick et al. 2007). Currently, the average cost of a test falls within the \$100-150 range, with projections estimating the cost to decrease even further within the upcoming decades (Tripp and Grueber 2011; MIT Technological Review 2018). The decrease in cost as well as the massive growth in the industry has made these genetic tests more widely available to the general public. As the costs of these tests have dropped, their popularity has substantially increased. The appeal of these tests can be very enticing: as of January 2018, 9 million Americans, roughly 1 in 25, were estimated to have taken an ancestry test (Forbes 2018). Ancestry,

one of the largest DNA testing companies, is projected to have roughly 3 million participants alone. Additionally, within the last year, more genetic testing kits have been used than all previous years combined (MIT Technological Review 2018).

Given the massive rise in these tests, a large public discourse has arisen to address the ethical concerns of these technologies, including the potential they have to foster genetic discrimination, propagate the use of artificial gene selection, and validate eugenic-centric ideologies (Kerr, Cunningham and Amos 1998; Duster 2006; Duster 2011; Nelson 2008). Owing to the “scientific sheen” of being rooted in science and technology, these tests can endorse reductionist views, which pose a threat to the current sociological construction of race (Kerr et al. 1998; Nelson 2008; Duster 2011; Roth and Ivermark 2018).

Despite these fears, one particular manifestation of the genetics industry is growing massive in popularity: the commercially-available ancestry test. In 1997, researchers discovered several genetic frequencies that varied across different racial groups (Shriver et al. 1997). These frequencies were dubbed “Ancestry-Informative Markers” (Fernandez and Shriver 2004). Using these frequencies, ancestry tests claim to be able to identify consumers’ ancestral origins (Meloni 2014; Duster 2015). These tests also claim to help actualize genetic information, shaping both cultural and personal identity by helping consumers understand more about who they are and where their families comes from (Foeman et al. 2015; Ancestry 2017a).

Although there is a perception that these genetic tests are irreproachable in their accuracy, genetic tests vary greatly in the results they give (Kerr et al. 1998 ; Philips 2016). Most of the DNA an individual receives from their parents comes through the

form of autosomal DNA, or atDNA. This information is presented in the form of 46 chromosomes, which are compacted DNA and proteins structures (U.S. National Library of Medicine 2018). Half of a parent's genetic information, or 23 chromosomes, is passed to their children during reproduction. Twenty-two of these chromosomes are autosomal chromosomes, which carry the vast majority of a person's genetic information. Most of the sequences and markers analyzed in ancestry testing are found on these chromosomes. In addition to these autosomal chromosomes, one sex chromosome is inherited from each parent, which also carries genetic information.

In the process of reproduction, all this genetic information is combined together in a process called genetic recombination, or genetic shuffling (Rieger 1976). This process imparts genetic diversity by redistributing genetic information. The results of this genetic redistribution are unique to every individual, meaning that the 50% of the genetic information an individual receives from their parents will not be the same as that from their siblings. During this process of recombination, any genetic information that the individual does not inherit will be lost, meaning that a certain amount of genetic information will not be passed to the next generation (U.S. National Library of Medicine 2018). This can result in the complete loss of ancestral lineages. For those not acquainted with an understanding of this process, it can be quite a shocking surprise, as entire ancestral groups may be completely lost.

Although most of the DNA a person has can be found in the nucleus in the form of atDNA, other forms of DNA are also passed down from generation to generation (U.S. National Library of Medicine 2018). Mitochondrial DNA (mtDNA) is a form of DNA that is directly passed from mother to child when cells reproduce (Cann et al. 1987).

The unique characteristic of mtDNA only being passed through the mother allows testing companies to examine a consumer's maternal haplogroup, a section of similar genetic information found among descendants of the same maternal ancestor (Cann et al. 1987). This can be observed by examining the small evolutionary changes that have taken place over the past several thousand years (Wilson et al. 1995). Several studies have even claimed use mtDNA to identify the maternal ancestral from whom all humans descended from, dubbing her the "Mitochondrial Eve" (Wilson et al. 1995; Cann et al. 1987; Tierney 1988; Templeton 1993).

The male analogue of the mtDNA test is the Y-chromosome test (Hammer 1995; Oikkennon 2015). Unlike atDNA that undergoes recombination, Y chromosomes do not mix with X chromosomes (Hammer 1995; Whitfield, Sulston, and Goodfellow 1995). As such, the DNA on this chromosome, called Y-DNA, remains mostly intact from father to son (Whitfield et al. 1995). Due to the relative stability in transference from generation to generation, Y-chromosome DNA can be used as a traceable marker to positively identify a male's paternal haplogroup, or father's lineage (Whitfield et al. 1995; Stumpf and Goldstein 2001; King and Jobling 2009). These tests can be used to trace family origins in conjunction with surname genealogy by examining paternal haplogroups, the unique set of mutations that pass from father to son (Stumpf and Goldstein 2001; King and Jobling 2009).

These different types of DNA tests can be used to investigate various traits within the field of ancestry testing as they each have specialized functions. Y-DNA can be used to identify paternal haplogroups, although it can only be used by men and almost exclusively only for paternal identification. mtDNA can be used to find maternal

haplogroups, however, it also can only be used to investigate information that comes from the participant's mother and her maternal haplogroup (Cann et al. 1987).

Autosomal DNA can be used to investigate specific base pairs and comprise the majority of genetic tests. Admixture tests, which compare atDNA frequencies to others, examine the autosomal DNA of a person for frequencies that correspond to specific groups that share them. For this reason, atDNA is usually the main focus of ancestry test labels, as AIMs on these segments can be compared to the testing company's AIMs database (Duster 2015).

Although multiple types of DNA can be observed in genetic testing, the process of analysis is generally the same (Hochschild and Sen 2015; Philips 2016). First, a biological sample is needed from the consumer. Given that saliva is an easily accessible source of biological material, a spit sample is often used by test companies. A testing kit is mailed to the participant for the collection of this sample (Shriver and Kittles 2004; Bolnick et al. 2007). Once the company gets the sample, the DNA is applied to a microarray plate with frequencies that correspond to the AIM frequencies being investigated. These markers vary across different populations, and correspond with genetically-similar groups. The markers screen for single-nucleotide polymorphisms, or SNPs, that differ in a particular code (e.g. the code of a person with European ancestry may be GTAC, whereas an individual with African ancestry may have a code that reads GTGC) (Bolnick et al. 2007; Philips 2016).

The AIMs of interest vary from company to company, as each company has their own unique assortment of AIMs (Duster 2015; Philips 2016). These AIMs, although constituting a very small portion of DNA, are used to represent the entirety of a person's

genetic makeup. Given this, more accurate tests screen for more ancestry-informative markers. Once completed, the results are used to determine the proportion of genetic information the consumer has that directly relates to a specific ancestral group. When determining racial labels, similar genetic groupings from participants are grouped together and used to identify ancestral labels. This method presents a problem in that the AIMS frequencies vary from company to company, meaning that test results are more reflective of the size of the genetic database and the reference markers used than the migratory patterns of the participant's ancestors. (Rotimi 2003; Bolnick et al. 2007; Philips 2016). Additionally, company test interpretation can also pose a problem because testing companies tend to essentialize cultural groups, often mislabeling AIMS or even conflating racial groups with ethnic groups. Participants, being almost completely dependent on these interpretation of test results, thus internalize this conflation.

#### Genetic Testing and the Construction of Race: The Problem with “Geneticized Identity”

Given the rise in ancestry testing, questions have been raised about the essentialist-minded characterizations of race espoused by these tests (Duster 2006; Duster 2011). The social sciences have had a difficult time in creating a single, all-encompassing definition of race, as some characterizations of race see it rooted in biology, whereas others see it completely social constructed (Spickard 1992; Appiah 1985; Helms 1995; Mallon 2004). Racial classification is a form of social categorization that is particularly subject to, and even constructed by, social pressures in a society (Spickard 1992; Helms 1995; Mallon 2004; Reverby 2009). According to Spickard,

(1992) “racial distinctions are a necessary tool of dominance.” Race exists as social categories rather than ontological facts, allowing groups with more power to maintain control over other groups (Spickard 1992). This is further established by the fact that biological race cannot be traced to singular genes in the genetic code (Brodwin 2002; Duster 2005; Hauskeller 2013; Lawton and Foeman 2017).

Race has been a highly contentious area in the field of sociology. W.E.B. Du Bois (1940) wrote much on race, emphasizing that biological characteristics were not the root cause of subjugation but, rather, that White dominance and their higher levels of racial privilege were forcing Blacks into situations of oppression. Du Bois (1940) went so far as to say that the modern-day economic system was “based on the recognition and preservation of so-called racial distinction” (DuBois 1940). This characterization of race as a construction of sociopolitical forces can further be seen in Omi and Winant’s (1986). This theory holds that the formation of racial categories is a process that is intrinsically linked to social institutions: “racial formation” is “the process by which social, economic and political forces determine the content and importance of racial categories, and by which they are in turn shaped by racial meanings” (Omi and Winant 1986). This conceptualization of race, which focuses more on the social rather than biological roots of race, is one of the most commonly-held understandings of race in sociology (Omi and Winant 1986).

The recent rise of genetic technology has posed some problems for the sociological discipline’s understanding of race as a social construction (Duster 2011). Sociology, as a discipline, has not had to seriously confront genetic technology-based theories of race until very recently (Duster 2015; Frank 2015). The emergence and

visualization of ancestry, as controlled through the medium of genetic technology, however, calls into question the social construction of race that has been foundational to development of the field of sociology (Duster 2003; McGlynn-Wright 2014; Frank 2015). Outside of the social sciences, there have of course been efforts to propagate biology-based theories of race going back to the 16<sup>th</sup> century. One such example is “scientific racism,” theories purporting to use science to validate different racial categories and hierarchy (Linnaeus 1767; Gobineau 1855; Grant 1916).<sup>1</sup> The rise of genetic technology poses a specter of the return of such biology- or genetics-based theories. Furthermore, control of this information is largely held and exercised by a White-dominated society that can ostracize and exoticize non-White bodies and racial labels, especially by establishing White genetic markers as the cultural norm (Nelson 2008; Duster 2015).

A growing body of social science literature on ancestry testing has sought to gain a sociological understanding of ancestry testing, including its impact on personal and racial/ethnic identities. One of the first investigations into the effects of ancestry testing was conducted by Nelson (2008) to understand the experiences of ancestry testing on test-takers of African descent. Nelson (2008) was the first to note that despite fears of genetic tests completely subsuming previous racial identities, ancestry tests may only contribute or add to the pre-test identity that an individual has. Additionally, Nelson (2008) introduced the term “genealogical aspirations,” a term which refers to the individual’s desires to verify or learn of past family narratives. With this term, Nelson (2008) brought attention to the fact that consumers seek ancestry testing to actively learn more about their ancestral roots.

Building on Nelson's work, researchers Scully, King and Brown (2013) sought to examine how ancestry testing and genetic evidence affects identity narratives of individuals. This was done to examine personal narrative histories within the context of larger historical events. The findings of this study argue that the genetic code stands as the newest form of cultural memory (Scully et al. 2013). They also highlight the important drawbacks of ancestry testing, as this information is exceptionally susceptible to personal biases and the imagination of the participant (Scully et al. 2013). The rise in genetic testing has incorporated an "applied genetic history", genetic information incorporated into a historical context, into the identity and personal narratives of participants (Scully et al. 2013). In this respect, ancestry testing serves as a modern-day technological extension of genealogical research, as it explores information beyond the capacities of the traditional approaches of the discipline.

Further analysis into the sociological implications of ancestry testing was conducted by Sandra Lee (2013). Lee sees the use of ancestry testing as "recreational genomics", as ancestry testing was originally targeted at genealogy enthusiasts (Bolnick et al. 2007). This moniker was also used to address ancestry testing's avoidance of examining medically-relevant information, though this has since changed with the arrival of health services available through testing sites such as 23andMe and Ancestry (23andMe 2018; Ancestry 2018). The term "recreational genomics" was also used to identify the niche interest of those interested in ancestry testing, regardless of the level of emotional and financial investment of the individuals in the tests (Bolnick et al. 2007). Those who engage in recreational genomics aim to identify racial labels and ancestral lines while avoiding the influence that historical events may have exerted on these

results. Doing so avoids having to deal with the harrowing real-world implications of the test results, such as addressing the role slavery may have played on a person's genetics (Bolnick et al. 2007; Lee 2013).

Scully et al. (2016) continued their contributions to the sociological understanding of ancestry testing in a follow-up study to their 2013 work. Having examined how ancestry testing affects identity narratives and applied genetic histories, the researchers then turned their attention to the process through which individuals understand and process the results of their ancestry tests. The researchers note two different motivating factors for why participants seek the tests. Some individuals are interested in identifying unexpected results but in a "low-stakes" manner (Scully et al. 2016). This serves as an extension of "recreational genomics", as these individuals seek to identify new racial labels without them significantly impacting the rest of their life (Bolnick et al. 2007; Lee 2013; Scully et al. 2016). On the other hand, other individuals are more interested in learning about their family's past, which may have been lost and may carry strong emotional implications upon their uncovering, especially when contextualized into historical events. Uncovering such results could carry an intense emotional burden that could affect these individuals' personal rights, benefits, and emotional well-being, and as such, these individuals are dubbed "high-stakes" clients (Duster 2011; Scully et al. 2016). In exploring this dichotomy, Scully et al. (2016) note that there is more of a spectrum-oriented character to this distinction rather than a clear-cut binary. As we will see, my research suggests that "low-stakes" and "high-stakes" conceptualizations of genetic testing have increased relevance along racial lines.

The most recent study addressing the effects of ancestry testing on racial and ethnic identity was undertaken by Roth and Ivermark (2018) who conducted a large online study to examine the effects of ancestry testing on participants across multiple races. This study is unique in relation to previous studies in that it interviewed individuals both before and after taking the tests. Participants were examined across different races as a means to examine how different racial and ethnic backgrounds influence the motives and internalization of these test results. A major contribution of this study is the formulation of the “genetic options theory,” a theory that proposes that participants “pick and choose” certain test results to incorporate into their identity rather than completely change their identity based on the test results. This is done based on personal identity aspirations and social appraisals of their social groups (Roth and Ivermark 2018). My study will utilize Roth and Ivermark’s methodology of interviewing test-takers before and after taking the test while drawing upon the genetic options theory for analysis (Roth and Ivermark 2018). However, this study will further add to the field by providing a stronger emphasis on the differences in motivation and interpretation of test results along racial divides, thus highlighting variations for why participants take these tests. Additionally, this research will provide a more in-depth examination into the effects of ethnicity on racial identity for Hispanic respondents.

#### THEORETICAL FRAMEWORK: THE GENETIC OPTIONS THEORY

The genetics options theory devised by Roth and Ivermark (2018) combines the ideas of genetic determinism and social identity theory to develop a nuanced

examination of how individuals accept the results of their tests. The genetic determinism component proposes that the identity of an individual is directly determined by the results of these ancestry tests, leading to the creation of “geneticized” identities (Nash 2004; Nelson 2008). From this viewpoint, the causal mechanism implied is that genetic tests directly change the whole identity of the individual (Bliss 2013). On the other hand, Tajfel’s social identity theory (1981) and Brewer’s optimal distinctiveness theory (1991) suggest that individuals would seek avenues to make their identity more unique by choosing certain racial labels to make themselves appear more distinct within their social circles.

Drawing from both the social identity and the genetic determinism theories, the genetics option theory proposes that consumers who take these tests do not “simply accept the tests” results as with genetic determinism theory, but “pick-and-choose” the results of their test (Roth and Ivermark 2018). According to Brewer’s model of optimal distinctiveness (1991), this selective choosing of certain ancestry results provides participants with an avenue to acquire uniqueness as a means to differentiate themselves within their social groups while at the same time still maintaining membership in the group. This means that instead of building an entirely new identity, genetic tests contribute to an already established identity by informing it with new genetic information that goes through several social-processing mechanisms. This suggests that ancestry tests have a strong social component connected to them. This selective uptake of test results is codified by Roth and Ivermark (2018) through two dialectics: identity aspirations, and social appraisals.

The first of these, identity aspirations, refers to the identities that test-takers desire to incorporate into their identity. Drawing from Nelson's work (2008), the concept of identity aspirations draw from the concept of "genealogical aspirations," though the term "identity" is traded for "genealogical" to better encapsulate the motives behind respondents wanting to modify their identity (Roth and Ivermark 2018). Nelson's (2008) original genealogical aspirations pertain specifically to Black individuals or those of African descent. Roth and Ivermark (2018) define identity aspirations as the "preferences for the ethnic or racial identities they [the test-takers] seek to claim". Roth and Ivermark also note that "a consumer's identity aspirations are shaped by her private regard for both her pretest and identity and the new identities suggested by the test results" (2018). The second dialectic, social appraisals, refers to how an individual then decides to incorporate the desired test results into their identity in light of how valued the new identities are by society. Although the test-taker aspires to have the most unique and distinct test results incorporated into their identity, the viability of these test results are determined based on how the test-taker envisions others will react to the test results. For example, if the test-taker assumes the test results will be too unique in a negative or stigmatizing way, they will not incorporate the test results into their identity (Roth and Ivermark 2018).

Given that the genetic options theory is rooted in Tajfel's work on social identity, this paper will also draw from Tajfel's social identity model (1981) to frame its findings. The social identity model focuses primarily on the social understandings and relationships individuals have with others (Tajfel 1981). Specifically, this model is concerned with how participants see themselves as members of social groups and how

they build their own identity through these groups. The model also addresses privilege by noting that individuals will engage in acts to enrich the honor of the group they belong to while also discriminating against others (Tajfel 1981). This propagates stereotypy and dislike of other groups. There is also a clear distinction made between in-groups and out-groups in this model. This is particularly interesting within the context of ancestry testing, as individuals will be presented with multiple labels, some of which will be in-groups and some out-groups.

Furthermore, there are three unique processes to the social identity model (Tajfel and Turner 1986). The first process holds that individuals categorize groups of people in order to have a good understanding of the expectations of the different groups. Next, the social identification stage involves psychologically aligning oneself with one or more of these groups. The individual then becomes invested in the well-being of the group and develops a strong sense of solidarity with it through group identification. Lastly, once the groups are formed or are made salient, comparisons between that particular group to other relevant groups are made to validate and honor the in-group (Tajfel 1981). This model holds that individuals incorporate new information into a pre-standing identity framework rather than adopting a new identity. Later work into the effects of genetic testing verifies this, as individuals selectively choose from the series of labels they are presented with rather than change their identities wholesale (Nelson 2008; Roth and Ivermark 2018).

In addition to focusing on the relationship between genetic testing and race, this study will also closely investigate its relationship to ethnicity. Much like race, there is “no universal definition of the concept of ethnic identity in literature” (Evans et al. 2010). For

this study, an ethnic identity will be viewed as an identity “developed from shared culture, religion, geography, and language of individuals who are often connected by strong loyalty and kinship as well as proximity” (Torres 1996). As with race, individuals self-identify with a particular ethnicity that they have connections with through family and culture (Phinney 1990).

Understanding ethnicity will be particularly important when examining Hispanic identity, as this is an identity that focuses more on cultural heritage than it does on racial grouping or physical appearance. When examining Hispanic identity, Ferdman and Gallegos (2001), in their formulation of the Latino Identity Development Model (2001), note that, to Hispanics, race is of secondary importance. The study also notes that Latinos prefer to identify with their ethnicity rather than with a particular racial identity, although, when forced to choose a racial label, most prefer to identify as White instead of Black.<sup>2</sup> Ferdman and Gallego’s model (2001) proposes that, rather than having a process through which their Hispanic identity is fully realized, Hispanics have particular “orientations”, or viewpoints, through which they view their Hispanic identity. These orientations address how participants understand their Hispanic identity based on social pressures around them. These orientations range from full Latino identity to Hispanics seeing themselves as members of other races (Ferdman and Gallego 2001).<sup>3</sup>

This study will contribute to this growing body of literature on the impact of ancestry testing on racial and ethnic identities by being one of the first studies to investigate the effects of ancestry testing before and after individuals take the test while focusing on the implications of racial privilege. Interviewing participants before and after ancestry testing allows me the opportunity to note temporal changes in participants’

understandings of race and their own identities. Focusing on the issue of racial privilege and its effects on identity transformations pre- and post-test allows me to identify emergent themes based on relative racial power. This helps frame the social appraisals and identity aspirations that test-takers aspire to have in order to contextualize the decision-making process of the individuals. This is one of the first qualitative research studies aimed at how individuals understand the tests both before and after taking the test, thus allowing the opportunity to note temporal changes in participants' understandings of race and their own identities as well as how this may affect their identity with certain groups. This is also the first study to pointedly note the differences between different racial groups with varying degrees of racial privilege and how this reflects in their motivations for, and understandings of, taking the test.

## METHODS AND DATA

In order to investigate the effects of genetic testing on personal identity and understanding of race, forty individuals were interviewed before and after taking a direct-to-consumer genetic ancestry test. These individuals had a vested interest in taking an ancestry test, and were recruited through one of two ways. Most of the participants in this study were recruited from genealogy societies and cultural organizations. The other participants were recruited from word-of-mouth through the snowball technique. Lastly, one participant was a member of my immediate family, allowing me the opportunity to reflect on the process that my participants were experiencing.

The forty individuals in the group were broken down based on relative racial privilege. This racial privilege was determined by how the participants categorized themselves before taking the test. Their pre-test identity was the main determinant in categorizing the individuals. Half of the participants, twenty individuals, identified as European, Caucasian, or White. This group was further divided up into ten individuals who were connected to a genealogy or heritage group. The other half of the participant pool, twenty individuals, had less relative racial privilege. Half of these individuals, ten participants, identified as Black or of being from primarily African descent. The other ten individuals identified as Hispanic. A further divide was made in the Hispanic group to further distinguish between White and Black Hispanics.

Participants' ages varied dramatically, with the youngest participant being twenty years old and the oldest being sixty-seven. Participants who did belong to a racial society tended to be older, whereas younger individuals did not belong to such a community. Overall, the median age of respondents was 45. White individuals who belonged to a genealogy or heritage organization had the oldest mean age, with a mean age of 56 years of age. Non-affiliated Whites' average age was 43 years old. The mean age of Black participants was 46 years of age. The Hispanic group had the lowest mean age, being 33 years of age.

There was also quite a variety in terms of the participants' occupations. Twelve individuals worked in the business sector. Three individuals were involved in the leadership or organizational elements of a church or religious group. Four individuals were students. Four were stay-at-home parents. Three individuals were involved in the field of education. Five were involved in the field of medicine. Additionally, a

construction worker, mechanic, industrial engineer, and librarian were also interviewed. Lastly, six individuals were retired.

In terms of gender, twenty-two participants were female and eighteen were male. Although relationship status was not considered necessary for this study, four couples were interviewed. Each couple considered themselves “mixed race” or “ethnically-distinct”. Also of note, seven of my participants were first-generation immigrants, having come to the United States during their childhood. Two of them had migrated within the past year.

In attempting to recruit so many different individuals from various organizations, some resistance was met in the form of gatekeepers: members of a community who control access into the community. In order to access the social groups from where I would recruit participants, I first needed to pass the gatekeeper. Some gatekeepers held structural power over these communities, occasionally even asking participants to participate in the study on my behalf. These power-drivers were essential components of generating interest for this project within these communities. Among the Hispanic and German communities, groups to which I had racial ties, gaining access through the gatekeeper was a fairly easy task. On the other hand, accessing communities that I did not have racial ties to, specifically the Black community, turned out to be an impossible task. In these instances, individuals belonging to these racial groups were recruited through word-of-mouth and by suggestion from other participants. This process was fairly easy as, following the end of interviews, many participants would suggest other individuals for the study. This meant that participants of specific racial groups could be recruited even if I could not recruit them through a specific social organization.

Due to the requests of gatekeepers to take part in the study, two individuals who had already taken an ancestry test were also interviewed. Given that this information could only contribute to the study at hand, these interviews were incorporated into the findings for this study. All interviews were semi-structured and conducted from May 2018 to August 2018. Additionally, these interviews were conducted in person, were audio-recorded for future transcription, and lasted anywhere from 30 minutes to two hours depending on the individual. Two interviews were held with each participant, one before and one after looking at the results of the test. Since I am bilingual, I also offered to conduct the interviews in Spanish if the participant preferred. Two participants asked for the interviews to be conducted in Spanish, so four total tests were conducted in Spanish. Once a participant expressed interest in taking part in the study, a time was set up for a pre-test interview to ascertain their conceptualization of race and thoughts on their own identity. When the pre-test interview was completed, the participant was then given contact information to set-up a post-test interview for when they received the test results. The testing companies took anywhere from six to eight weeks to process the DNA before sending the results back.

Once the test results came back, the respondent then contacted me to set-up a post-test interview. As with the pre-test interview, the follow-up was audio-recorded. The focus of the post-test interview was to not only note any changes to their outlook on race or ethnicity, but also to detail their experience with the ancestry test process. Two interview guides (Appendix A; Appendix B) were used to guide the conversations during the respective interviews, though the conversation could at times completely deviate

from these questions depending on what the individual found important or felt they wanted to address.

Following the end of the post-test interview, I also offered to answer questions related to the results of the ancestry test, as I have had experience in the field of genetics. This was used to clear up misconceptions or questions related to the material, though this was rarely needed, as the results of the test were seen as very easy to follow by many of my participants. At this time, I also allowed the individuals to choose a pseudonym for the recording and presentation of the results.

Once the before and after interviews for the 40 participants had been completed, the project then shifted to data analysis following the transcription of the post-test interviews. Despite the large number of participants in this study, transcription was done by hand. During this time period, the four interviews that had been conducted in Spanish, a pre-test and a post-test with two participants, were translated from Spanish to English.

Grounded theory methodology was used to inductively identify emergent themes (Corbin and Strauss 1994). Despite the large number of interviews for this project, coding was done by hand rather than relying on qualitative data technology. In regards to the different groups in this study, coding was done along racial lines: White, Black and Hispanic. A further division was also made within the White group to distinguish between those who belonged to a genealogy or cultural organization and those who didn't. Another division was also made within the Hispanic group by distinguishing between White and Black Hispanics. Themes were examined that focused on the motivations for participants taking the test as well as how they internalized the results.

Other themes relating to the social process of how ancestry tests are taken were also examined.

## FINDINGS

The coding of interview results indicated several distinct approaches among participants for why they chose to take the test and how they internalized the results of the test. Although each participant's upbringing and understanding of the process of ancestry testing influenced the way they reacted to the results in their own unique fashion, several emergent themes began to appear across different racial groups. The findings of this study are categorized based on the larger themes that emerged among racial and ethnic groups. The main themes addressed are: the social-oriented acquisition of certain racial labels by Whites, the search for a genetic narrative by Blacks, the division of this by degrees of racial privilege, a "proselytizing" effect brought about by familial interest in the test, and the underlying importance of historical implication for understanding different participants' approaches to these tests.

### Confirming the Privilege?: White Results

For this study, White participants were divided into two categories to help focus on the underlying motivations behind their decision to take the test. Out of the twenty White individuals, ten belonged to a genealogical or ethnic organization. Two Kansas City genealogical societies, groups that focus on the accrual of genealogical records, participated in the study. Secondly, two cultural groups also participated; a

German heritage society and an English cultural society. Most of the individuals in these societies were retired, and had already taken a commercial ancestry test. On the other hand, ten White individuals who did not belong to such a group were also interviewed. Most of the White participants in this study voiced an interest in either gaining diverse test results or simply verifying their status as a member of the cultural organization they belonged to. However, despite this desire for diversity, ultimately none of the White participants embraced their multiraciality.

The largest overarching theme that appeared during the interviews with the White participants was the intention of finding new racial labels to incorporate into their social identity. This was done in order to make them appear more than simply “White”. A similar finding was found in the “pick-and-choose” strategy uncovered by Roth and Ivermark (2018). White individuals approached the study with the intention of learning more about their identity to differentiate themselves from others and to acquire new racial labels in an effort to be more than simply “White”. A pre-test interview with Dean, a white accountant in Kansas City, demonstrates these identity aspirations:

*JK: So what kind of results are you hoping to find in your test results?*

*Dean: Hopefully I'll find a lot of English. There might be some other information that will hopefully show up too about the North Celtic tribes*

*JK: Are there any labels in particular that you're hoping to find?*

*Dean: Well, I'm also really hoping to find some Irish blood. I bet everyone will like that*

*JK: Who will like that?*

*Dean: My family, especially Betty [Dean's wife], but also the rest of the family*

As with all participants, White individuals demonstrated a desire, regardless of the motivation, to learn more about their ancestral identity. They were interested in informing their identity with new information. However, several differences were noted

among White individuals in comparison to Black and Hispanic individuals, particularly in their willingness to accept the results of the test. Especially among individuals connected to a racial organization, White participants were primarily interested in verifying their identity or incorporating new results to provide diversity in their pre-standing identity. There was a greater focus on making their identity more specific in an effort to get away from being seen as a simply bland “White” individual. The following interview with Steven, a White male not affiliated with a cultural organization, said the following in his pre-test interview:

*JK: Why are you seeking out a genetic test?*

*Steven: I'm hoping to find something special about my family. Everyone I know is from Europe but I'd like to know a little more than just that.*

The participants' desires for these more specific test results operate in such a manner as to theoretically impart uniqueness into their identity to provide symbolic diversity. The usage of these ethnicities collected from the tests resembles a “symbolic ethnicity”, an ethnicity that an individual can willingly choose to engage with on their own terms rather than on the terms of others (Gans 1979; Alba 1990; Waters 1990; Roth and Ivermark 2018). The following excerpt from a post-test interview with Adele, a retired librarian belonging to a German heritage society, illustrates the selectivity of how participants incorporate these symbolic identities. In taking the test, Adele's test results had come back fully European. However, rather than simply being German, Adele's results also revealed French, English, and Tyrolean heritage.

*JK: So when the test results came back, were they what you expected?*

*Adele: For the most part, yes they were. I mostly got a lot of German. I knew I was mostly Tyrolean, but some of my test results came back as French too!*

*JK: That's exciting! Did you expect any French results to come back?*

*Adele: No, I didn't. I think my great grandfather may have had some French results, but besides that I'm not really sure.*

*JK: So how did you deal with this French Identity?*

*Adele: Well, I have to accept it, don't I? It's part of who I am now. I guess I'm part Scandinavian too.*

Adele was very concerned with her Germanic roots. Verifying this heritage had served as the primary motivation for taking the test in the first place. However, the discovery of other ethnicities in the test results prompted the incorporation of new racial labels into her identity. For Adele, this incorporation was without issue as it was very “low-stakes”: it did not endanger her identity as a White individual and was not very emotionally-impactful.

Some participants had difficulty with undesired racial labels. The following excerpt represents another individual's reconciliation with their test results. In this instance, Bob, a retired soldier and member of a German society, had to come to terms with an unexpected racial label.

*JK: How did the test results come back?*

*Bob: Well, they were pretty close to what I imagined.*

*JK: Ok! What were the results?*

*Bob: Well, when I opened the website up, I got the big screen that showed all the different test results. Most of it was what I expected. There was lots of British in there, some Czech that came from my mother's side.*

*JK: Was that what you more or less expected?*

*Bob: I'd say so. But there was some Ivory Coast*

*JK: Oh ok. So this was something you hadn't expected to see?*

*Bob: No it wasn't.*

*JK: Do you know where it came from?*

*Bob: I really don't.*

*JK: So what do you think about it?*

*Bob: Well, I thought about it, but there's no real way that I could have it. The percentage is way too high. I'd have to have a real close family member with these test results, so it was probably a mistake or something.*

*JK: So you don't think the test results could be true.*

*Bob: I honestly don't think so.*

*JK: Do you think other people would believe you if you said you had ancestors in the Ivory Coast?*

*Bob: I don't think anyone would believe me if I told them 20% of me came from the Ivory Coast.*

Adele and Bob's excerpts highlight the participants' selectivity for which racial labels were chosen. However, how the individuals dealt with the results of these tests demonstrates the primary motivations behind why White participants took the test. Both individuals were selectively choosing certain labels to incorporate into their identity and make themselves more unique. However, both participants were also seeking symbolic ethnicities that verified their identity as Germans while not endangering their White identity. Adele, having test results that reaffirmed her White identity, chose to incorporate the French racial label into her identity. On the other hand, Bob, having to deal with a racial label with less racial privilege, chose not to accept the possibility of Ivory Coast heritage, as this label posed a threat to his White identity. By selecting only those labels that verified his pre-test identity as European, Bob also ignored the racial labels that made him non-White.

Within the construction of modern society, a nominal European or "White" identity is hegemonized in such a way to make it appear bland (Roth and Ivermark 2018). According to Hughey (2012), Whites experience "white debt", a feeling that their racial identity is boring, and cultureless, yet superior. The fact of this apparent blandness signifies the extent to which Whiteness is the invisible standard against which all other races are compared (Hughey 2012; Roth and Ivermark 2018). For Whites, taking an ancestry tests offers them the opportunity to differentiate themselves from this standard by making themselves appear more diverse.

In addition to the relatively benign blandness of simply being “White”, White guilt is another issue that can theoretically be alleviated from consumers through the use of these tests. White guilt is the feelings of shame White individuals have because of their association with an identity that bestows upon them unfair advantages while hurting others (Steele 1990; Powell, Branscombe, and Schmitt 2005). When White individuals take the ancestry tests, they have the chance to acquire new identities that differ from the hegemonic standard of simply being White. This gives test-takers the opportunity to acquire symbolic ethnicities and alleviate their feelings of guilt (Gans 1979; Waters 1990). In the minds of these individuals, acquiring these ethnicities grants them the opportunity to alleviate some guilt associated with being White while also improving their distinctiveness.

However, ignoring unwanted test results meant that, rather than using the test as a means to gain symbolic ethnicities, some White individuals were more interested in verifying and maintaining their identity as Whites. If they did choose to incorporate a new test result, this was done “safely” by choosing a racial label that was distinct within their social group, but not distinct enough to jeopardize their membership as being White (Brewer 1991). This was seen with Adele as she incorporated her French test results into her identity, making her more distinct in her social group but also not distinct enough to endanger her White identity. The possibility of costless “symbolic ethnicities”, to appear more diverse while remaining securely within the confines of being White, seemed to be the driving force for many White participants to take the test (Cf, Waters 1990). As demonstrated with Bob, unexpected results that questioned an individual’s

White identity endangered their social identity. This suggests that the social appraisal mechanism stops the incorporation of such test results (Roth and Ivermark 2018).

The possibility of symbolic ethnicities becoming part of an individual's identity based on test results raises some questions about the optionality of engagement for these ethnicities. If the individual didn't know about these ethnicities beforehand, how will they manifest and become visible in their post-test identity? Symbolic ethnicities inherently serve as a "costless" new identity, as they are not evident to others unless specifically engaged with by the test-taker (Gans 1979; Alba 1990; Waters 1990). Beth, a German librarian, was searching for symbolic ethnicities, but only those that were endemic to the European continent. The following excerpt from her pre-test interview highlights this:

*Beth: I'm hoping my results to show that I have some French instead of just German and English. I think I might have some Italian*

*JK: Do you think any test results might come back with other information?*

*Beth: From other places?*

*JK: Yes.*

*Beth: I don't think so. Do you mean from Africa or Asia?*

*JK: Potentially.*

*Beth: I don't think so. I'm pretty sure everyone in my family is from west Europe*

*JK: Ok! So you expect mostly European blood.*

*Beth: I can't imagine having anything else from anywhere.*

In the event that unique and unexpected results came back that still validated their White identity, White participants would place specific emphasis on these results, selectively placing more value on them than other test results, while the identity aspiration mechanism served to select out unwanted results (Roth and Ivermark 2018). However, particularly among individuals belonging to a genealogical and ethnic organizations society, having a novel racial identity served as a status symbol, even if it

deviated from the specific group it pertained to. This provided them with a means to differentiate themselves from the rest of the members of their community, making them distinct within their social circles, albeit not distinct enough to endanger their membership in the group. Eugene, a retired school teacher and amateur genealogist who was part of a Kansas City genealogical society, notes the following in his post-test interview:

*JK: Were the test results what you expected?*

*Eugene: Well, I think everyone gets some results that they expect and some that they don't.*

*JK: That's true. The test results vary widely from person to person. If you don't mind me asking, which populations came back in your test results?*

*Eugene: Well... for the most part, I got a lot of Western Germany. I have a lot of extended family in Westphalia there, so that didn't surprise me. What surprised me though was a large number coming from the Netherlands.*

*JK: Oh that's interesting. Did you know you had Dutch blood?*

*Eugene: Honestly, I didn't. My family loved that though! And Matt [a pseudonym for a chapter leader to which this individual belonged to] found that very interesting.*

As shown with this interview, the results did not differentiate Eugene too much from his initial identity (or at least not enough to be ostracized from the group) and had generally about the same level of racial privilege tied to it. The incorporation of this identity highlights the decision-making process outlined by Roth and Ivermark (2018): the identity aspirations of the individual had successfully aligned with the social appraisals of the individuals around them, thereby allowing them to incorporate this label into their identity. This represents the public regard an individual has towards how others will judge the results of the test and how they value the results of these tests (Rivas-Drake et al. 2009; Roth and Ivermark 2018).

By having these symbolic ethnicities, engagement in ethnicity becomes optional and can be voluntarily acted upon on the individual's own terms rather than those of others (Gans 1979; Water 1990). Especially if the new ethnicities are not self-evident in the test-taker's appearance, the person gains a higher level of agency for how often and how closely they can associate with the new racial label. The symbolic ethnicities that makes them more distinct becomes something that they can ultimately control and use on their own terms.

Several commercials from ancestry services have demonstrated this optionality of ethnicity (Ancestry 2017a; Ancestry 2017b). Marketing done by testing companies hint at ancestry testing having the power to shape cultural identity (Nelson 2008; Ancestry 2017a; Ancestry 2017b; Roth and Ivermark 2018). This suggests that consumers can learn about new and unexpected ethnic and racial labels, and can explore these new labels by engaging with cultural symbols and practices, such as wearing cultural garb or taking part in cultural festivals. Doing so also suggests that these new symbolic identities can change an individual's entire identity. When asked about these advertisements and comparisons to their own results, several Whites talked in a similarly hyperbolic manner about wanting to engage in cultural events related to their new post-test symbolic ethnicities. Larry, a retired White individual affiliated with a Kansas City German ethnicity group, said the following in his post-test interview when his test results revealed Teuton heritage, a wandering Celtic-Germanic tribe.

*JK: So with the results back, what do you think you'll do with this new information?*

*Larry: [laughing] "I'll have to ask William [a leader in a German heritage group] if there's some events we can do. I'd imagine that they probably do, so I can go and toot my Teuton horn!"*

Larry felt that doing these events had been validated through taking an ancestry test and discovering his Teuton heritage. The individuals who received such symbolic ethnicities reveled in the fact that they were not just simply “White.” In their minds, they had gained symbolic ethnicities that optimized their distinctiveness and validated their engagement in cultural events (Gans 1979; Water 1990). Some participants reveled in this through the possibility of travel. Jay, a White mechanic not part of a genealogical society, proudly proclaimed the following about his unexpected results in his post-test interview:

*JK: So how are you addressing the unexpected results?*

*Jay: When I got the results back, I talked to it with my wife. “I’d always wanted to go to Italy but I guess this means I have to now!”*

*JK: Have you been to Italy before?*

*Jay: Not before. But I had always felt a connection to Italy. I guess it makes sense now.*

This “spiritual connection” was found with many other participants, as many felt that taking the test verified a metaphysical connection they had to a particular country or place. Occasionally, some individuals would even place metaphysical importance on the results. As Agnes, a retired teacher affiliated with a German organization, noted the following in her post-test interview:

*JK: So how did you react to the results of the test?*

*Agnes: “You know, I’ve always felt somewhat drawn to Ireland. I talked to Harry [Agnes’ husband] about visiting Ireland”*

*JK: Oh that sounds fun! To explore the culture?*

*Agnes: Yes. I was thinking about going just to see where everyone came from.*

Among White participants, this particular pattern of acquiring racial labels occurred only with certain labels. The racial labels that were internalized either denoted Native American or European lineage. Despite Native Americans being a group with less racial

privilege, having Native American identity was not seen as a threat to White identity for the participants in this study. This was juxtaposed with other identities, especially Black, which were seen as dangerous to the participants' White status.

Transversely, some identities did not show up in the test results of some participants. Based on the recombination of DNA, some Ancestry-Informative Markers can be lost (Rieger 1976). In the event that test results came back without specific ethnicities, participants were faced with the task processing the lack of these results and choosing how to deal with this gap in their pre-test identity. Sarah, a White student not affiliated with an ethnic organization expected Native American ancestry in her test results. When this ethnicity didn't come back, she noted the following:

*Sarah: "I'm a lot more White than I thought I was. But this can't be true. My great grandparents WERE Native Americans."*

In this particular instance, the actual verification of Native American lineage was put into jeopardy, as genetic recombination may have completely excised the Native American-associated AIMs. On the other hand, there is a possibility the Sarah may not have had Native American origins. The participant's adamant insistence on having Native American heritage points to a stronger pre-test identification with her ethnicity that resulted in a decision to retain her ethnic identity despite it not being scientifically-validated by the test.

Another issue among White individuals was the presence of hominid DNA, a typically undesired result. This can be a large source of contention among White individuals (Lloyd 2001). Among individuals in this study though, it appears that a pre-established cultural and racial identity would not be greatly changed or threatened by

the results of the test. Whites, especially those with higher racial privilege, initially found these results off-putting, given the portrayal of Neanderthals as savage or animalistic in popular media. However, once the participants conducted their own research on Neanderthals, such as how Neanderthal DNA was introduced into the gene pool, many changed their attitudes on Neanderthals.

*JK: Was there a percentage that came back as Neanderthal?*

*Eugene: You know, there was!*

*JK: Would you want to talk about it?*

*Eugene: Sure.*

*JK: So how much came back.*

*Eugene: It was about 3%, which is a lot. I thought different species couldn't breed together.*

*JK: It kind of depends on the way species is defined, but there is proof of hominid-DNA. I have some myself*

*Eugene: Oh really!*

*JK: Yes, most people with European ancestry have some level of hominid DNA.*

*Eugene: Interesting! Does that explain the large eyebrow ridges and shorter size that Europeans have?*

*JK: Well, not really. It kind of depends on the actual traits and DNA, but science can track certain frequencies related to Neanderthal groups.*

*Eugene: Huh wow!*

By providing information about how much Neanderthal DNA a test-taker had, ancestry tests opened a dialogue between myself and test participants on this subject, overcoming the stigma the respondents may have towards this. Such a dialogue may even have the theoretical capability to normalized this stigma on a societal level by addressing factual information on Neanderthal and hominid DNA rather than stigmatize it (Jenkins et al. 2012; 23andMe 2018).

## The Proselytization Effect and Understanding the Family Corpus

Another interesting emergent theme was found among many test-takers in this study. Among the participants in this study, ancestry tests had a strong family character. No individual in this study completed their interviews without addressing how their family would be involved. This demonstrates a powerful “proselytizing effect” to ancestry testing. After reviewing the results of the test, nearly every respondent offered up another individual who would be a good candidate for the project. This was particularly the case for the participant’s immediate family or social circle, especially those who were assumed to have more exciting results. Although this mannerism was found across all racial groups, there was a particularly adamant insistence among individuals who interpreted their results as boring to have others take the test. This tendency was noted particularly among White participants with a non-White or more diverse spouse. In the case that results were seen as particularly boring, spouses or children were offered up as scapegoats in order to make amends for the participant’s own bland Whiteness. This is also particularly interesting, as many of the spouses coaxed into taking the test had initially expressed reservations about taking the test.

*Kathryn: Well, I honestly hoped this would have gone on longer. I’m sorry the test results weren’t as exciting as we’d hoped.*

*JK: There’s no need to apologize for that. We can’t control our ancestry.*

*Kathryn: [laughs]Well, that’s okay for a geneticist to say! I’m really excited for when Cameron’s test comes back. Hopefully it will have more substance.*

*JK: Are you expecting the results to be more exciting?*

*Kathryn: Hopefully! At least the results won’t all be just White.*

Kathryn’s post-interview shows how her test results had come back unexpectedly drab. There was not much in terms of symbolic ethnicities that could be drawn upon. Kathryn had offered her Middle-Eastern husband as another possible participant. At the

beginning of this project, Cameron had actively voiced not wanting to take the test at all. However, towards the end of the recruiting period of the test, immediately after Kathryn had received her own test results, Cameron had been persuaded to take the test. The following excerpt from his post-test interview shows Cameron's thoughts on the "ancestry-test experience":

*JK: So what did you think of the test?*

*Cameron: You know, that was really fun. This entire thing [referring to the study as well], I found to be very enjoyable. A+ for the ancestry test experience! I don't know if Kathryn liked it as much though because her results were so tightly packed.*

As demonstrated through the excerpt with Kathryn, it appears that such respondents were hoping to revel in the social joy of having exciting racial labels, even if it meant relishing it vicariously through other individuals' results. The symbolic ethnicities that had been robbed of these individuals could, by proxy of having had others take the test, be vicariously enjoyed.

This trait also points to another emergent trait that appeared among respondents. Similar in essence to the proselytizing effect that brought other individuals to the ancestry testing was the integration of genetic test results into a "family corpus", or body of genetic connectedness (Jenkins et al. 2012). Many participants insisted on having other family members take the test. Four couples took part in this study because of the White partner's interest in the study. In these tests, the White partner would ask their partner to take the test either to have them learn more about their own identity or to properly attribute test results to their children.

Once the results of the test came back, the family would examine the results, allocating racial labels and lineages to specific family members. As more people took the test within the family, more missing pieces were identified and filled out in the family corpus. Based on this benefit, it appears that genetic testing can also inform and develop the understanding of the family corpus among individuals and families who may not have a strong ancestral tradition. The discovery of African ancestry in her ancestry test pushed Gabby, a White student not associated with an ethnic organization, to have the rest of her family investigate their ancestry further. Her mother, Francis, took the test and noted the following about the unexpected results when it was learned that the genetic information was attributed to her.

*JK: So how do you feel about having the African ancestry?*

*Francis: It's really interesting. It could make sense, but I guess we just never really thought about it too much before.*

*JK: Do you think there's any implications or applications of this?*

*Francis: What do you mean?*

*JK: Do you think that you know where it came from?*

*Francis: Yes, I think I do. We have Native ancestry, so it must have come far back on my dad's side when Africans were moved to the Americas*

In this respect, these individuals are high-stakes clients, as the results of the tests go beyond simply recreation and carry real-world implications as seen with the uncovering of a personal narrative rooted in an historical social institution (Scully et al. 2016).

#### Links on a Broken Chain: Black Test Results

In comparison to White participants, Black participants approached the test with a worldview shaped by a lack of privilege. As such, these individuals were not motivated by the need to protect a pre-standing privileged racial identity and were more interested

in learning about their family's history. In this sense, Black participants' motivations for taking the test were more narrative-oriented than they were socially-oriented, a process that may have developed from a storied history with economic inequality and access to these tests. The history of genetic testing makes it abundantly clear that genetic technology in the United States is a White-centric technology (Bolnick et al. 2007; Lee 2013; Roth and Ivermark 2018). Funding for genetic research originated in a White-dominated field, and the initial costs of genetic technology created a barrier from access for lower-income communities, of which Black individuals are disproportionately represented.

As the cost of ancestry tests continue to decrease (Meloni 2014; Philips 2016; Forbes 2017; Concert Genetics 2017; MIT Technology Reviews 2018), the relative number of people who can afford the test rises. Many Black participants noted the massive decrease in cost and how the test were not affordable for them beforehand. Bill, a Black pastor at a church in Kansas City notes the following in his pre-test interview:

*Bill: I just think it's amazing how far technology has come. There's no way that I would have been able to afford these tests a decade ago.*

*JK: Yes, the cost in the tests has dropped dramatically. Do you think this is a good thing?*

*Bill: Yes, it's a very good thing. More people can take the tests now. It's good for them and very good for the companies too!*

*JK: Had you been wanting to take the test before?*

*Bill: When I heard about it, I wasn't sure but a lot of people at the church starting taking them and showing me the results, so that's when I started to want to take it.*

*JK: How long ago would you say that this happened?*

*Bill: This started happening a couple of years ago*

The decreasing cost of ancestry tests allows individuals who would not have originally had access to these services this opportunity to take them. Especially among those wanting to take the test but who did not originally have the economic capital to buy the test, the drop in cost opens the doorway to something they may have been seeking for decades.

Unlike Whites who were more interested in broadening their pre-test identity to incorporate new identities, Blacks were more interested in *refining* their pre-test identity. They want to link themselves with specific geographic locations and peoples to have a better understanding of who they are besides just being “Black”, as per the findings of Nelson (2008). A history of structural discrimination and slavery has destroyed the direct ties people with African descent had to the past. However, maintaining identity as an African American was also important among these individuals, as this ethnicity was an important aspect that these individuals wanted to remain a part of. Put simply, Whites want to be “White and...”, verifying their White identity while also gaining symbolic ethnicities to make themselves more unique, while Blacks want to be “Black by being...”, through understanding more about their family’s lost genetic narrative. In other words, these individuals sought more depth and history in their identity rather than to make it more distinct and unique.

The following excerpts demonstrates the distinction between depth and distinctness by showing the differences in motivations for Harold and Jay, a Black clergyman and a White mechanic respectively. The following is an excerpt from Harold’s interview pre-test interview.

*JK: Why are you seeking to take an ancestry test?*  
*Harold: I want to know where my family came from*

*JK: Do you have any ideas about where they may have come from?*

*Harold: I'm not entirely sure. The issue with my family is that some of my family was brought over from Africa. I think some of my family came from Ghana but we can't really be sure.*

An excerpt from Jay's interview contrasts Harold's highly emotional desire to find a lost connection with a simple desire to verify his family's heritage.

*JK: Why are you seeking to take an ancestry test?*

*Jay: I'm hoping to find something more about my family*

*JK: So you already kind of know where your family came from?*

*Jay: For the most part yes. Most of my mother's side is Swiss. Most of my dad's family is Polish*

Although the individuals were interested in informing their personal identity with racial labels, the primary motives behind them were distinct. Blacks, having been forced to deal with structural discrimination, were trying to connect themselves to their historic past and incorporate new narratives into their personal identity that had been lost and erased. On the other hand, White participants were much more interested in discovering new identities that made their identity more distinct while at the same time maintaining their White-centric identities. They were seeking symbolic ethnicities whereas Black participants were seeking to reconnect with their ancestral heritage links.

Unfortunately, attempting to connect to an applied genetic history can uncover some horrifying details from the past. Institutionalized oppression and discrimination can be found in the genetic code of Black individuals, alluding to the struggles faced by their ancestors. When examining the test results of individuals with African ancestry, the impact of colonization, trans-Atlantic migration and slavery were major issues that clearly influenced the results of the test (BBC 2003; Nelson 2008; Bryc et al. 2015). Another frightening risk of taking ancestry testing is uncovering the shadow of ancestral

rape. If a Black individual takes the test and gets AIM labels that correspond with frequencies of a White ancestor several generation ago, the possibility that rape occurred becomes a frightening possibility.

A non-insignificant percentage of European racial labels was found in the test results of many Black respondents. In having to emotionally process the results of the tests, Blacks were forced to contend with these results, either accept the implications of the test results or deny them. The focus for Black participants initially departs from the dichotomy of identity aspirations and social appraisals and onto choosing to either contextualize the implications of the results or to ignore them. Only after this point can the participants decide which symbols they consider symbolic and which to incorporate into their identity. The following excerpt demonstrates how Amy, a fourth grade school teacher, reacted when confronted with the results of the test:

*JK: Were there any unexpected results that came back*

*Amy: There were. I was about 11% Northwestern European*

*JK: Did you expect to have such a large percentage?*

*Amy: I didn't but it doesn't matter. I'm nearly 90% Black, so that's enough to be completely Black to me*

This rejection of test results was found among all the Black participants, though this manifested itself in either of one of two ways. In the first case, Black individuals would briefly mention the racial labels before immediately changing the conversation, as shown with Amy. The other manner through which White labels were undermined was when the participants simply ignored these results and did not report them.

Unfortunately, due to the constraints of confidentiality, I only examined the test results of participants were comfortable disclosing this information. The only way that I knew of the presence of these labels was therefore when participants asked me to interpret the

results of the test, meaning that the full extent of White labels in Black test-takers went unknown.

Much like symbolic ethnicities that endangered racial privilege among White respondents, White labels were ignored by Black participants in order to maintain their Black identity and ignore or minimize the impact of racial discrimination and slavery. Like their White counterparts, these individuals were also not interested in assimilating White racial labels into their identity. Unlike White individuals however, who aim to make themselves appear more diverse by ignoring certain White racial labels, Black individuals ignored White labels due to their implication of oppressive structural forces. Although the history of oppression and institutional discrimination is written into the genetic code of these individuals, the participants' White ancestors were not seen as part of the family and were excluded from the family. The participants' genetic narratives had been tainted by a history of ancestral rape and slavery, and the participants choose to actively ignore these results.

As Blacks are more focused on contextualizing their family's past within history, their results carried real-world implications that could affect their own personal rights, benefits, and emotional well-being. As such, Black participants can be seen as being more "higher-stakes" clients than White clients who simply approached the test with the goal of identifying symbolic ethnicities (Lee 2013; Scully et al. 2016). The "lower-stakes" clients engaged in the tests in the same manner as the original genealogical enthusiasts for whom the tests were originally marketed towards. Their motivation was more "recreational" in nature (Bolnick et al. 2007; Scully et al 2016). This dichotomy of lower-

and higher-stakes clients highlights the more vested emotional and real-world interest that Black participants have in the results of the test than their White counterparts.

#### Por Una Vida Nueva: Hispanic Identity

In addition to examining the racial dichotomy of Black and White test participants, Hispanic individuals were also interviewed in this study. This was done to explore the impact of ancestry testing on ethnicity as well as on racial identity. However, given the limitations in terms of the size of this study and the socioeconomic position of most Hispanic communities in the United States, Hispanic individuals were grouped into the category of lower racial privilege.

The variation in Hispanic identity points to an issue in effectively categorizing Hispanics based purely on their cultural identity: the massive wealth of different regions where the Hispanic identity is present can result in different cultural understandings of how ancestry tests are interpreted. In order to address this, Hispanic individuals were subdivided into White Hispanics and Black Hispanics based on their stated pre-test culture and identity. Although their identity as Hispanics took precedence over their identity as either White or Black, the assumption that there is a homogenized Hispanic culture would detract from the diverse outlooks that different subgroups of Hispanics could contribute. As such, out of the ten Hispanics, five individuals were categorized as either White Hispanic or Hispanic of primarily European descent. The other five Hispanics in this study were categorized as Black Hispanics, of primarily African descent.

*Hispanic or Bust: White Hispanics*

For the purposes of this study, White Hispanics were individuals who identified most closely to their Hispanic identity but also came from European descent based on their stated pre-test identity. Unfortunately, when attempting to classify participants through these means, the division was not always self-evident to many of the Hispanics in this study. Their identity was so deeply connected to their family's place of origin that they needed to contextualize their identity before being able to identify themselves as White or Black Hispanics. The following excerpt highlights how Anna, a stay-at-home mother and migrant from Spain, categorized herself for the study when unexpectedly asked this question:

*JK: Within the Hispanic identity, how do you see yourself?*

*Anna: I have family from Spain. Most from Valencia but there's also some Native American blood there too.*

*JK: Wow that's exciting! If you had to identify yourself as White or Black, which would you go with?*

*Anna: [after a pause] If I had to go with one of those, I would say White.*

As we see through the pause in Anna's interview, a classification scheme for dividing Hispanics individuals into White Hispanics and Black Hispanics seemed rather bizarre. The Hispanic identity was so quintessential to her identity that dividing this into White and Black subethnicities was momentarily jarring. The following excerpt from the pre-test interview with Elena, a Mexican dental assistant, likewise demonstrates a difficult in the classification of Black and White Hispanics. The interview was translated from Spanish into English.

*JK: So within the Hispanic identity, how do you see yourself?*

*Elena: Mexicana.[Female Mexican] My mother's side comes from Malaga and my dad comes from Granada. We think there might be some Moro [North African] too on my dad's side.*

*JK: So would you say that you're Mexicana then, or that your Hispanic identity comes from where your family come?*

*Elena: Huh, that's a good question. I've always thought of myself as Mexicana.*

*JK: Ok! If you had to classify yourself as either a White or Black Hispanic?*

*Elena: Oooh that's a good question. Huh. I would probably say that since we know people are from Europe than anywhere else and lots of people think I look it so I'd say White.*

For some individuals, the classification scheme of White and Black Hispanics meant that some had to rely on their appearance to justify their identity. The following excerpt from the pre-test interview with Anastasia, a White Hispanic college student, echoed a similar biologically-deterministic approach of appearance to identify herself as a White Hispanic.

*JK: Within the Hispanic identity, how do you see yourself?*

*Anastasia: Well, I would say that I'm mostly Honduran, with a little bit of Mayan.*

*JK: If you had to identify yourself as either White or Black?*

*Anastasia: Well, look at how White my skin is.*

*JK: So you would say White Hispanic then?*

*Anastasia: I guess, but I see myself as more Latina*

Connected to essentialist sentiments of Hispanic identity is another emergent theme that appeared in both Black and White Hispanics. There was a misconception that the "Hispanic" identity would be reflected in the results of the test as an actual racial label. This suggests that to Hispanics, ethnicity and race are basically synonymous. Their ethnicity is seen as another part of their racial identity that will be reflected in their ancestry results. A continuation of the interview with Anastasia highlights the expectation of this essentialized Hispanic identity:

*JK: What kind of results do you expect to get back?*

*Anastasia: Well, I think it'll mostly be Hispanic. Mama's Honduran and Abuelito's an indio (Native American). There'll be some Spain in there too, and I think some German too.*

The emphasis on the expectation of “Hispanic” or “Latino” being the primary test result was also found with three other Hispanics, one White Hispanic and two Black Hispanic. For these individuals, the social identity of being “Hispanic” was something that would be reflected in their genetic identity. Unfortunately, as “Hispanic” is not a racial group that can be accurately defined by the results of an ancestry test, their Hispanic identity will not be confirmed by the test. Marianna, a Black Hispanic human resources officer, noted that she expected “Hispanic” to appear in her test results. Having later realized that her Hispanic identity would not be explicitly noted in the ancestry test results, Marianna noted the difference between this misconception and her test results in her post-test interview.

*JK: So were the results what you expected?*

*Marianna: For the most part yes, but I think there might have been somethings I said that wasn't right.*

*JK: Which ones?*

*Marianna: (laughs) Well, I think I might have said that I was going to get back Hispanic?*

*JK: And that didn't come back?*

*Marianna: No, I got a lot of Ecuador Native, and Iberian*

*JK: Oh, ok. So the Hispanic is reflected in these results?*

*Marianna: Yes.*

The distinction between Marianna's ethnic identity -Hispanic- and her racial identity - Native American and Iberian- was not immediately distinct to her, and were seen as essentially the same.

For other individuals, the manifestation of the Hispanic identity into region-specific racial labels was already known. These individuals were able to identify the racial origins of their Hispanic identity. A continuation of Anna's interview highlights how the Hispanic identity is expressed through various racial labels. In it, Anna contextualized her Hispanic identity into a series of smaller ethnic and racial labels.

Rather than expecting “Hispanic” to be an overarching racial identity that would appear in the test, Anna was able to identify particular racial labels that would be reflective of her Hispanic identity.

*JK: What kind of results do you expect to get back?*

*Anna: It'll be a lot of Spanish blood. With a lot of my family coming from Spain, there will be a lot of European heritage I think.*

*JK: Do you think there might be some Iberian or southern French as well?*

*Anna: Maybe, but there will be Native American. But again, I think it'll be lots of Spanish blood.*

*JK: And do you think that this will reflect your Hispanic identity?*

*Anna: Yes*

When individuals were classified as White Hispanics, they had ancestral origins that came from Europe. These individuals were primarily fair-skinned, and frequently mentioned being able to pass as White if needed. Some even noted feeling consumed by White culture at the expense of their Hispanic identity. Elena’s pre-test interview shows this sentiment.

*Elena: I would say that most of my culture Latina comes from the traditions we have.*

*JK: How so?*

*Elena: Well, I don't usually get to talk to people in Spanish unless they are part of my family or church. In my job, I'm expected to talk in English and I have a hard time trying to teach my kids Spanish. We can only really do Spanish things when my family comes to visit or when I get the chance to sit down and cook for everyone.*

*JK: That's interesting. Does that make it hard to keep your culture with your family then?*

*Elena: I would say so. It's hard to stay the same and pass down culture when everyone around you is American. Even your kids don't want to speak Spanish.*

*JK: I'm sorry to hear that.*

*Elena: There's no need to apologize. It's just part of life here. Everyone just sees as White. It's fine for them and it's been good for me. My cousins are darker and they immigrated here. We lucked out but they're a lot darker and stayed down in Texas. They've had a lot harder time and a few just moved back.*

Elena's interview notes a varying degree of receptibility by American culture to different Hispanic individuals. As this interview demonstrates, certain Hispanic individuals have a harder time adjusting due to cultural views of skin color. Elena alludes to having an easier time adjusting to American culture based on physical appearance and her ability to blend in. However, in Elena's eyes, this "blending in" is done at the expense of her culture. In particular, she feels a sense of cultural tradition being lost with her kids.

For the White Hispanics of this study, there was an understanding that they could pass as Whites if needed. As shown with the biological descriptors of their physical appearance, this mistaken identity of being simply White could be used to gain benefits, though at the possible loss of their culture (Ferdman and Gallagos 2001). However, the intrinsic benefits of appearing White means that they were able to fare better than those with darker skin.

By engaging in this behavior, despite adhering to the Hispanic identity as their primary identity, White Hispanics have access to a certain degree of racial privilege that Black Hispanics cannot draw from. Phenotypically, these individuals are more likely to pass as White and can draw from this reservoir of privilege. Another excerpt from a pre-test interview with Anastasia helps illustrate the power that several ethnic Hispanics have when they have the ability to physically pass as White individuals.

*JK: So do you feel that you've ever experienced discrimination based on your ethnicity?*

*Anastasia: Honestly, I don't think I can say I have.*

*JK: But you think that Hispanics do experience discrimination in the United States?*

*Anastasia: Well yeah, it's the White people who own all the companies right?*

*JK: Objectively, yes, the United States is fairly dominated by White culture*

*Anastasia: Yeah, so people discriminate against others?*

*JK: So why don't you think that you experience discrimination if others have experienced this?*

*Anastasia: Well just look at me. I'm really White for being Hispanic. Everyone probably just thinks I'm White when they look at me*

Although the individuals may have identified themselves as Hispanics, the fact that they could draw from White privilege demonstrates a hegemonizing tendency in American society to classify individuals into racial groups based on physical appearance. Individuals are either seen as White or Black based on their skin tone or other physical traits and then classified into racial groups based on this. Within the case of Hispanic individuals, although individuals may have had a unique ethnicity, they were still perceived by the rest of the world as being White.

However, when the results of the test came back, White Hispanics turned back to their Hispanic identity to address new test results by incorporating new test results into this part of their identity rather than into their White or European identity. The Hispanic identity was seen as so expansive and multi-faceted that many racial labels could be incorporated into it without issue. Upon the arrival of her results, Anna noted the following :

*Anna: I had expected Spain DNA but I was surprised when I got the Italian information too. It does make sense though. Being Hispanic could mean a lot of things so I kind of expected something like that to pop up*

Rather than incorporate this test result into her identity as an entirely new label, Anna incorporated this symbolic ethnicity into her Hispanic identity. Being Hispanic meant these individuals could pull from a massive, widespread culture that crossed multiple continents and included many different people. New test results could therefore be easily attributed to and incorporated into their Hispanic identity.

*Two Sides of a Flip Coin: Black Hispanics*

The other half of Hispanic respondents were “Black Hispanics” or “Afro-Latinos and Latinas.” These participants were individuals with African descent who also identified as Hispanic. Afro-Latinos have an interesting history. Although many identified as Hispanic and with a specific country of origin (e.g. Puerto Rican), they also alluded to coming from Africa. When addressing identity aspirations, the desires of the Black Hispanics were very similar to those of White Hispanics. Many wanted or expected European results, specifically Spanish labels, to be reflected in the results of their tests. A pre-test interview with Monica, a Puerto Rican teacher, demonstrates a desire to uncover European ancestry.

*JK: What kind of results are you hoping to find?*

*Monica: I am really hoping to find out if there's Spanish blood. When I talked to my mother about this, she was really pushing it hard, because she said her father came from there but we're gonna see*

The desire for European heritage can be reflected in the cultural context from which these individuals come. Female participants, in particular, would note that traits usually considered White or European were considered the beauty norms of their communities when they were growing up. The following pre-test interview with Leia, a Puerto Rican stay-at-home mother, demonstrates this. The interview was translated from Spanish to English:

*Leia: ... Yes, but having pelo liso or lacio (straight hair). was considered more beautiful than having pelo rizado (curly hair). Also, because I had darker skin, I would also sometimes get called “negrita” (little Black girl).*

*JK: So in many ways did you feel that there might have been some discrimination?*

*Leia: Absolutely! Discrimination for Black people is everywhere. Especially in Latin America, there's lots of discrimination on the color of a person's skin, their hair and the people they're with.*

This shaming was also noted among the other participants as well. Four out of the five participants noted at one point in their life being shamed for their outward Black appearance. In terms of relationships with others, Black Hispanics had the most pointed identity aspirations stemming from hegemonized European beauty standards. They were actively seeking Hispanic-European racial labels to gain more symbolic ethnicities. Although this tendency was the most pronounced in Black Hispanics, it was still present throughout the whole Hispanic group. As the Hispanic identity is composed of multiple labels, having European and Spanish heritage was highly coveted and also seen as not too far-fetched a possibility.

This massive diversity in Hispanic identity was represented in the test results of the participants. Among all the Black Hispanics participants who shared their test results, no individuals had a majority of genetic information that originated from one particular continent. Among Non-Hispanic White participants who shared their results with me, the majority (at least over 50%) of genetic labels corresponded with European labels. Among non-Hispanic Blacks, this was the case with African test results (again totaling over 50%). Among this group, the next largest group of racial labels came from Europe. White Hispanics had more diversity than their non-Hispanic counterparts, with racial labels that included genetic information from Europe, the Americas, and occasionally Africa. In this case, most of the genetic information came either from Europe or the Americas (in the form of Native American labels). In a similar manner to how non-Hispanic Whites responded, White Hispanics also largely ignored the racial labels that corresponded with Africa. Black Hispanics, on the other hand, had test results that pulled substantially from Europe, the Americas, and Africa. Although by no

means representative of all Black Hispanics, the results of the ancestry tests pointed to roughly 20-40% of the Black Hispanics' genetic profiles coming from each of the three continents.

When asked what results they expected, the Black Hispanic respondents identified wanting to find test results for both their Hispanic *and* Black identities, unlike White Hispanics who mostly wanted to verify test results for their Hispanic identity. The White Hispanic respondents would completely forgo mentioning their White identity. The following interview with Lisa shows a yearning to connect to a lost heritage.

*JK: So what kind of results do you expect?*

*Lisa: Well, We're Dominican, so probably a lot of African and Native American. That'll be the Black part where I get the skin from. Maybe some European blood too? Everyone talks about European blood so maybe some of that too?*

*JK: Ok! So why did you decide to pursue an ancestry test?*

*Lisa: Well, I'd been thinking about it for a while and I figured this was one of the best opportunities for me to take one. I'm kind of curious to know what happened in our past.*

*JK: So would you say that you're interested in learning more about your family's history and do you think you would figure out what happened through the results?*

*Lisa: I am really interested to know what happened in the past. Like, I know that most of us come from the Dominican Republic but that's about as far back as it goes. So yes I would like to know what happened, and that's what you're here for too!*

As with non-Hispanic Blacks, the effects of slavery and colonization were evident in the results of the Black Hispanics. Just like their non-Hispanic counterparts, most Black Hispanics had ancestors that were forced into slavery and emigrated across the Atlantic ocean several centuries ago. Black Hispanics wanted to connect to this genetic narrative like their non-Hispanic counterparts, as they saw their Black identity being very valuable to their culture, unlike the White Hispanics who saw their White (though not Spanish) heritage as boring. However, rather than forming a unique identity, as was the

case with non-Hispanic Blacks, Black slaves' heritage and culture were subsumed into the Hispanic identity. As such, these individuals had a stronger sense of belonging to an ethnicity than non-Blacks; more non-Hispanic Blacks voiced searching for a lost connection as the main reason for why they wanted to take the ancestry test. Black Hispanics voiced more of an interest in finding symbolic identities and adding to their pre-standing identity.

The tendency for Hispanic cultures to incorporate so many other subcultures and races reflects an openness towards multiraciality in the Hispanic identity, a “subsumed multiraciality” (Wade 2017; Roth and Ivermark 2018). As such, Hispanic individuals, both White and Black, were more open to the idea of incorporating unexpected results than non-Hispanics. This openness towards incorporating multiple racial labels into a person's Latino identity is representative of Torres' work (2003), which noted that a major component of what determines how a Latino/a individual identifies is family values and traditions rather than their distant heritage (2003).

As Black Hispanics did not need to protect their White identity or the semblance of it, and with a cultural background that incorporated so many different identities, I found this group to be the most open overall to racial label results. Unlike White Hispanics and Whites, they did not need to protect their identity by only selectively choosing “costless symbolic ethnicities” but were also not grounded in a culture overwhelmed and constantly faced by the oppressive regimes of institutionalized discrimination that affected the ancestral narratives of Black participants in the United States. The shift away from institutionalized discrimination and the broader Hispanic

identity allowed them to be the most open to incorporating new test results into their identity than other identities.

### To Test or Not To Test?: Technological Optimism and Technological Pessimism

The investigation into ancestry testing revealed a secondary finding in the overall outlook that individuals have towards technology. The ever-increasing rise in the development of technology, especially bio- and genetic technologies, has led to a societal focus on the potential powers that can be abused by these technologies (Brown 2003). People either glorify the technology or fear its development. Among participants in this study, the perception of power of technology seemed to serve as a powerful influence behind the manner in which participants approached the test.

Technological optimism and pessimism refers to the level of trust a person places in technology (Brown 2003; Hjørleifsson et al. 2008). Specifically, technological optimism “overlooks the potential drawbacks of technology because of the utopian benefits it could offer” (Brown 2003). Technological optimists have a great trust in the accuracy and safety of technology. The technological optimists in this study were not concerned with the consequences and possible drawbacks of these tests. They were focused almost exclusively on the possible benefits that the tests could provide. In contrast to technological optimism, technological pessimism refers to “the overestimation of threat and harmful impact and insufficient attention to benefits or to people’s ability to respond appropriately to risk” (Hochschild & Sen 2015). Pessimists are preoccupied and “centered on security concerns”, even at the loss of possible

benefits (Hazlett et al. 2011; Hochschild & Sen 2015). Within the context of ancestry tests, this is rooted in the individuals' lack of understanding of the potential power of these tests. These individuals are unable to establish the risk posed by the test and are thus wary of it (Tetlock 2005; Hochschild & Sen 2015).

In terms of my study, twenty-nine out of the forty participants (73%) were easily definable as technological optimists at the end of the study. These included all the White, six Hispanics and three Black participants. Three of these participants initially exhibited technologically pessimistic views on the test but changed their outlook on the tests throughout the course of the study. In examining the post-test interviews, a relationship between trust in the ancestry tests and level of racial privilege was visible. Racially-privileged individuals approached the tests with the utmost faith in test accuracy, whereas less racially-privileged individuals tended to display reservations about the test. Technological pessimists would often note possible fears about the tests in their interviews, or the measures they took to assure themselves of their safety, such as using a pseudonym when sending in test results or having the test results sent to a friend's house.

Although technological-pessimists demonstrated the most worry about the drawbacks and possible consequences of the test, technologically-optimistic individuals also noted some shortcomings of the test. Despite their general trust in the results of the tests, 24 of the 29 technological-optimists noted off-hand that the tests could be false to a certain extent. A certain level of suspicion about the overall effectiveness of the test served a unique function for those individuals seeking specific symbolic ethnicities. In post-test interviews, these individuals were able to engage in retroactive test-result

nullification by attributing unwanted results to processing errors. This defense mechanism operates as a form of self-serving bias, as positive information can be used to the participant's benefit, while the negative information can just be ignored (Heider 1958; Blaine and Crocker 1993). Doing so grants participants a means to maintain the integrity of their pre-test identity while at the same time not completely invalidating the results of their test.

These individuals may have even conducted research to understand the possible shortcomings of the test. As Jay, a White doctor not affiliated with a genealogical or heritage society noted in his pre-test interview:

*JK: So do you think there will be variability between ancestry tests?*

*Jay: I guess it could make sense. Technology doesn't always work right?*

*JK: So how do you think you would deal with it?*

*Jay: "Well, I took a look at some of the different meanings for different results and how they could be confused with others. If I get Greek, I know what it actually means"*

Technological-pessimists had reservations about taking the test. There was usually an underlying motivating factor that made them want to take the test besides simply wanting to explore their ancestry. Technological-pessimists were found most commonly in individuals with less racial privilege, and particularly among Blacks. Technological pessimism was rooted in a fear of surveillance, given the history of abuse over this community with such events as the Tuskegee syphilis experiment (Brandt 1978; Washington 2007; Reverby 2009). Within the context of ancestry testing, this threat manifested in the fear that uploaded genetic information could be used as a means of discrimination or surveillance over individuals. When asked about their reservations on taking the tests, participants noted the outside media and current United

States sociopolitical climate as reasons for having doubt and a fear of surveillance. Cameron, a White doctor, notes the following when addressing the effect of current events on distrust in social institutions and science. Although Cameron was classified as a White optimist, he had displayed technologically pessimistic views before taking the test. Having immigrated from another country in social upheaval, Cameron voiced concerns about government observation and the possibility of the United States government drawing upon ancestry testing as a new means of surveillance. However, in engaging with the test, Cameron's pessimistic views were replaced with technologically optimistic views through his enjoyment of the process. He notes the following about the relationship between politics and fear in technology.

*JK: Do you think there are differences in the number of people from different races who take part in these tests?*

*Cameron: I would say so. Our current political climate has really polarized people. I think a lot of people who would have taken the test before won't do it now because of fear-mongering*

*JK: That's really interesting. How do you think this plays out?*

*Cameron: We see it now in the way people of different races act. A lot of people are afraid to give their genetic information because they fear the power the government has. We don't know how much information they have access to. My parents had a history of dealing with corrupt governments, so they would never take the test because that would just be another way the government has control over them.*

For Cameron, this pessimistic sentiment of government surveillance alludes to Foucault's theory of biopower (1976), in which the government maintains control over individuals by exercising authority over their physical bodies. In this case, the government could theoretically have access to the genetic information of individuals.

In order to overcome this fear of taking the test, technological pessimists needed to have a powerful overriding desire to connect with their past. Others engaged in these

tests at the behest of their families. Despite this, several individuals continued to display reservations about investing fully in the tests themselves. An excerpt from a pre-test interview with David, a Black businessman, shows this hesitation:

*JK: So when you get the test results back and look at the labels, you'll see a whole that makes you "David?"*

*David: Oh, it won't be that. I changed my name.*

*JK: Why'd you change your name?*

*David: [Laughs] So they can't track me*

This fear of granting access to others about their personal genetic information was very present among the pessimists. Rather than jeopardize their safety, many would use pseudonyms for their test results. As Leia, a Black Hispanic stay-at-home mother noted:

*Leia: it's just a way of not letting them have too much information*

In addition to having an overriding drive to learn more about their ethnicity, several pessimists also noted feeling drawn in by advertisements that enticed them by providing them with access to new information that would help them better understand their history. The desire to know about their personal heritage, coupled with persistent advertisements from different companies, eventually wore them down. Among the technological pessimists who took the test, there was such a driving force to understand their ancestry and connect with their past that they took the test despite the fear of surveillance. Owing to the fear of surveillance, and the fact that technological pessimism is rooted in an inability to accurately assess risk, technological pessimists spent a great deal of time researching genetic tests before taking the test. As such, they had a much better understanding of the finer workings of the tests than the technological optimists while also generally having a more specific reason for engaging in one particular test

over another. This observation was noted by Felzmann (2015) who suggested that individuals who use these tests without facing major threats are generally less informed about the process of the test itself and thereby have less of an understanding about the results of the test when they come in. This means that those individuals who used genetic tests as more of a recreational means are more reliant on the genetic labels prescribed by the company and also have less of an understanding of the procedures employed by the test (Felzmann 2015).

The fears exhibited by technological pessimists may be well-founded. Privacy policies and safety precautions vary from company to company. A 2015 study found that many genetic testing companies place more emphasis on data privacy rather than genetic privacy (Philips 2015). Only 10% of companies destroy physical samples of the DNA after the test, 25% openly stated they would disclose information to government upon request, and nearly half (48%) of companies allow open disclosures to others in given circumstances (Philips 2015).

As noted earlier with Hispanics, there was an assumption made by some that the label “Hispanic” or “Latino” would appear in the results of the test. Among the technological pessimists, this assumption was not present at all. The logical conclusion with this is that the pessimists who engaged in the study had conducted research on the test itself beforehand whereas the technological optimists took the test having conducted less research, thereby having an inflated or misinformed understanding of what information the test results could provide.

Using this divide, technological optimists were vocally open to adding unexpected racial labels to their identity. Despite this, there was very little difference in

how they internalized the results of the test in comparison to the pessimists.

Technological pessimists engaged in the test to learn more about the test. Whether the pessimists trusted the results or not, these labels provided them with a scientific root to potential ancestral lines they did not previously know about.

## CONCLUSION

The very premise of ancestry testing is built around discovering new genetic information. As shown through the interviews, participants took the test with the intention of learning more about their ancestors and where they came from. In analyzing the identities of individuals across different races, however, it becomes clear that ancestry testing means different things to different people and the ultimate effects of the tests vary depending on the motivations of individuals. Based on the pre-test identity of the individual, participants approached the test with either the desire to discover new symbolic ethnicities or to connect to a lost ancestral narrative.

Among the respondents in this study, this motivational binary played out primarily across racial lines. For White individuals, certain results were “geneticized” into their identity because it made them more unique, whereas other test results were largely ignored because they would detract from their White identity. The genetic options theory proposed by Roth and Ivermark (2018) is essential to understanding which results were chosen, as it provides a nuanced examination into how individuals incorporate test results into their pre-standing racial and ethnic identity. Using this theory, test results

are processed through two mechanisms; identity aspirations and social appraisals, before becoming part of an individual's identity (Roth and Ivermark 2018).

Unlike White individuals who were more concerned with diversifying their identity, Black and Hispanic respondents were more interested in refining their identity by seeking genealogical aspirations. The identities of Blacks and Hispanics have an implicit subsumed multiraciality, an intrinsic understanding of racial mixture inherent to their identity. This subsumed multiraciality meant that these participants kept their pre-test identity as "Blacks" and "Hispanics" more intact by virtue of their pre-test identities consisting of multiple sub-ethnicities and racial labels. Rather than the test results being used as a source of differentiation, new racial identities could be used to better inform less privileged individuals' pre-test identity.

Black individuals who took the ancestry tests in this study did so with the goal of connecting to their lost genetic past. Although the genetic options theory still applies to these individuals, albeit with a greater focus on genealogical aspirations over identity aspirations, these individuals are more concerned with informing themselves about where their ancestors came from than making themselves more distinct in their social circles. Social appraisals matter considerably less to Black individuals than they do to White individuals, as their relationship with the test is less socially-oriented than Whites. However, the selective nature of choosing certain racial labels is very much present with Blacks, as they will also pick-and-choose certain racial labels, though this is done as a means to minimize the influence of an upsetting history of institutional discrimination. The new labels, rather than diversifying the identity of the individual, are subsumed into their Black identity, meaning that their identity does not change to the degree that White

individuals do. Instead, the multiracial nature of Black identity means that these labels can be attributed to their ethnicity. Ultimately, engagement in the test carries a higher personal burden on Black individuals than it does on White individuals, as the process is more personal, focuses on connecting to a lost family narrative, and carries with it the possibility of uncovering disturbing historical implications. As such, Black individuals are more “high-stakes” test-takers than their White counterparts (Scully et al. 2016).

Hispanic individuals occupy a unique niche, as their ethnic identity often occupies positions of lower privilege, but the expansive and multiracial nature of the identity means that there is massive diversity in culture and physical appearance. Overall, it appears that the motives for Hispanics can be to either search for new symbolic ethnicities or to search for a genetic narrative. The relative level of racial power they have access to, seemingly determined by whether they are White or Black Hispanic, seems to carry the biggest influence on their motivations, suggesting that physical appearance and levels of resulting racial privilege serve as the main influencers behind the motives for seeking out the test. However, when the results of the test come back, Hispanics subsume new test results into their Hispanic identity in the same manner that Black individuals do.

Ultimately, the impact of ancestry test results are based upon the racial identity of the individuals, as those with higher levels of racial privilege seek to make themselves more distinct within the confines of their White identity. On the other hand, individuals with less racial privilege approach these tests with the goal of learning more about their family’s past and seeking ancestral narratives to help them understand more about their past.

The findings of this paper contribute to the literature on the effects of ancestry testing by interviewing individuals both before and after taking the ancestry test, examining in more detail the effects of gradients in racial privilege, and the effects of ancestry testing on Hispanic identity. Being one of the first systematic analyses of the effects of genetic testing on identity, this paper provides more nuance into how these tests affect various racial and ethnic identities and how the various social forces that have come to characterize these groups affect the manner in which they approach the tests. Being the first study to interview individuals before they receive the results of their test, this paper also provides insight into the motivations for why individuals *seek out* the tests without having to rely on retrospective interviews.

By having the opportunity to better examine the motivations behind wanting to take the test, this paper's theoretical contributions validate both the findings of Nelson (2008) and Roth and Ivermark (2018) by contextualizing the motivations for wanting to take the ancestry test into the relative degree of racial privilege the participant has and how this influences their wanting to take the test. The racial privilege an individual has determines whether they seek out ancestry tests for new symbolic identities, or to connect to a lost ancestral one.

In addition to removing the retrospective barrier that had limited previous studies in this field, this paper also provides further insight into how various groups within the Hispanic identity are affected differently by ancestry testing. This was accomplished through examining sub-ethnicities within the larger Hispanic identity, namely White and Black Hispanics. This closer inspection into the Hispanic identity validates subsumed multiraciality in Hispanics by showing that many smaller sub-groups within the Hispanic

identity can incorporate ancestry test results in this fashion, but also highlights the differences in motivations for Hispanics taking the test based on degrees of racial privilege. This study also notes the aspirations that Hispanics have towards wanting European heritage and how these influence the motivations and incorporation of these test results into an individual's personal identity.

#### FUTURE RECOMMENDATIONS FOR STUDY

In reviewing this study, some drawbacks that may have influenced the results of the research include the small number of individuals interviewed. The relative diversity in different groups may have meant that particular viewpoints of individuals may have disproportionately influenced the results of the study. As such, a larger study could provide a more accurate perspective on the effects of ancestry testing that could contribute to a better overall public discourse on ancestry testing.

In some cases, participants also kept their test results from being viewed, meaning that the test results of some participants were interpreted solely by the test-takers, meaning that a larger emphasis could have been placed on certain test results over other. Lastly, as this particular study focused specifically on the binary division between Blacks and Whites, and then on Hispanics, other racial and ethnic groups such as Asians, Pacific-Islanders, Native Americans, and multi-racial individuals should be observed in future studies.

## ENDNOTES:

- 1 Scientific theories have also been used to validate scientific racist theories as far back as the 16<sup>th</sup> century, with some even validating the superiority of certain racial groups through the illusionary veil of scientific knowledge. In his classification schema, Carl Linnaeus (1767) categorized humans into five categories based on physical characteristics. The idea of subcategories was used by Arthur de Gobineau (1855), who would go on to propose that the human race was divided into three categories, of which white individuals were the superior group. Gobineau (1855) also theorized that interbreeding between races would lead to a collapse in society. *The Passing of the Great Race* was seen as a major scientific racist work that propagated ideas of miscegenation and Nordic superiority, proposing eugenic programs to protect the White race (Grant 1916).
- 2 The division between Hispanic and Latino has been a topic of discussion within America for many years. Studies note that “Hispanic” is the preferred term over “Latino” by two-thirds, although many individuals also do not make distinctions between the two (Taylor et al. 2011) Taylor et al. (2011) note that three in ten respondents did not distinguish between the terms “Hispanic” and “Latino, Latina, or Latinx”, and often use them interchangeably.
- 3 The Ferdman and Gallagos model characterizes an individual’s relationship with their Latino identity. Latino identity does not align well with American conceptualizations of race, meaning that Latinos are forced to contend with these differences. Ferdman and Gallagos characterize the manner through which this takes place in a series of orientations. These orientations are the Latino

Integrated, the Latino Identified, the Sub-group identified, the Latino as an “Other”, the Undifferentiated, and the White-Identified. Respectively, these orientations reflect how well a Hispanic individual has actualized with their Latino identity. Latinos can switch between orientations based on exposure to diversity in their personal lives (Ferdman and Gallagos 2001).

- 4 Roots is a TV series that aired from January 23, 1977 to January 30, 1977. The story follows the family of Kunte Kinte, a Mandinka warrior. The story begins with Kunte Kinte as he is shipped to America in the trans-Atlantic slave trade and forced to become a slave. The story then details the life of his daughter Kizzy, and his grandson George. The show’s finale is also the second most watched finale in U.S. history (Roots 1977).

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## Appendix A: Pre-Test Interview Guide

1. Please provide a little background on yourself. What is your race and ethnicity?
2. Are you multi-racial? If so, what race do you identify with most?
3. Why are you seeking out a genetic test?
4. What about genetics and ancestry do you find interesting?
5. What does the term “race” mean to you? How would you define it?
6. How does race come into play when examining DNA and genetics?
7. Are there other members in your family who have taken a DNA test? Are family members relying on you to better understand their own genetic composition?
8. Are you Latino? If so, how do you expect the results to come back?
9. Do you understand how genetic tests work?
10. Do you think there are differences in the number of people from different races who take part in these tests?
11. What genetic testing kit/company are you using?
12. What test results do you expect to get back?
13. Do you have any more questions for me?

## Appendix B: Post-Test Interview Guide

1. Please provide a little background on yourself. What is your race and ethnicity?
2. How long has it been since you first saw your test results?
3. Were the results of the test what you expected?
4. How did you react to the test results?
5. Did you share the results of your test with anyone? If so, who?
6. Do you think the results of your test would be different if you took the test again?
7. Would they be different if you took a test with a different company?
8. What does the term “race” mean to you? How would you define it?
9. Has your understanding of race changed?
10. Do you feel any noticeable changes in how you or your family identify after the results of this test?
11. Do you have any more questions for me?