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Kiara Jacoby

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Commercially Geneticizing Race, Ethnicity, and Nation: The Implications of the Discourse Surrounding Commercialized Genetic Tests on Identity

By: Kiara Jacoby, *Arcadia University*

Sitting in the park on a sunny day, I remember listening to my grandmother as she recounted the stories about her childhood in Rome and her experiences living through World War II. Later, when encountered with the question “What are you?”, I would reflect on the vivid pictures painted by her stories and proudly say, “I am Italian.” My heritage was solidified with a ‘Ciao bella’ as I walked through the door at family gatherings, by eating endless pizzelle cookies with my family, and through exchanging stories about my grandmother’s migration to the United States. What would happen if my identity sources suddenly changed, say from a connection with these lived experiences to a DNA test? How would it affect what I see as my identity and how I relate myself to the global world through my heritage? Seeing the growing popularity of DNA tests following commercials airing from a variety of commercialized genetic testing companies, I began to question how they impact identity formation. If commercialized DNA tests like 23andMe or MyAncestry claim to uncover heritage through the double helix, how does the use of these products impact lived and learned identity experiences? Only a small number of scholars and journalists have explored the intersection between commercialized genetic tests and the sociocultural.¹ This paper aims to contribute to said intersection by utilizing discourse analysis to understand how these tests impact identity.

Often, we receive narratives from family and friends, with first and secondhand migration accounts

or experiences with other countries. Identities develop into experiences as specific cultural traditions are performed with family and community. These racial, ethnic, and national conceptualizations divide groups of people as different from one another.² Identity frameworks are concepts created by humans, not concepts inherent in human existence.³ Often, discourse aids in the creation and rationalization of these identity conceptualizations, solidifying each identity as independent and intersectional.⁴ Despite their constructed nature, these identity categorizations are lived and experienced, connected directly to the socio-cultural-political world.⁵ Each individual human is a compilation of traits and characteristics influenced by societal and biological factors; the biological factors can be attributed to a person’s DNA (deoxyribonucleic acid). DNA lives in all human cells with fifty percent coming from each parent. Genetic and genomic science initially understood genetics in simple ways, but has developed significantly. Genetic analysis aids in producing more effective medicine, developing preventative measures for individuals with genetically inherited diseases, and creating a deeper understanding of the human species’ biological makeup.⁶ Apart from health and lab science, companies inspired by population genomics apply genetic analysis to modern constructions of race, nationality, and ethnicity to sell to customers. Personalized genomics are widely used and play into humans’ interests and needs to find belonging. The rise in popularity of personalized in-home genetic test-

1 Timothy Caulfield and Tania Bubelam, “Media Representations of Genetic Discoveries: Hype in the Headlines,” *Health Law Review* 12, no. 2 (2004), <http://hdl.handle.net/10822/524853>; Angela Saini, *Superior: the Return of Race Science*, (Boston: Beacon Press, 2019).

2 Rob DeSalle and Ian Tattersall, *Troublesome Science: The Misuse of Genetics and Genomics in Understanding Race* (New York: Columbia University Press, 2018).

3 Ibid.

4 Uma Pradhan, “Simultaneous Identities: Ethnicity and Nationalism in Mother Tongue Education in Nepal,” *Nations and Nationalism* 25, no. 2 (2019): 718.

5 Pierre Bourdieu, “Social Space and Symbolic Power,” *Sociological Theory* 7, no. 1 (1989).

6 Pamela Sankar and Mildred K. Cho, “Toward a New Vocabulary of Human Genetic Variation,” *Science* 298 (November 2002).

ing kits plays into consumers' psychological need to belong by providing answers to the questions "Who?" or "What are you?", genericizing identity that was previously lived and learned. To do so, these companies provide consumers with an opportunity to have their DNA coded for a set price. Companies play into these needs in order to sell products, while consumers use the products for these same reasons. Technologies of identity formation are created by human needs to belong, the current role of technology in society, and historic intersections of DNA and identity; framed by previously constructed lived identities, these technologies are commercialized and rationalized through discourse present in various media forms.

Discourse presented in media representing commercialized genetic tests in ads, reaction videos, and on company websites collectively iconize a discoverable 'true' identity as rooted in a person's genetic makeup (DNA). This is thus understood as being defined by one's group identity through previously constructed ethno-racial-national frameworks; all of which is re-affirmed through the negation of previously learned identities and scientific discourse use.

Technologies of Identity Formation⁷

Group and individual identity formation are integral to the human experience and are increasingly influenced by technologies and science. Group identity is created and expressed through morals and practices, fulfilling the human need to belong. As technologies develop, so does their impact on identity, human culture, and society. This impact extends to shaping identity. As scientific publications associate DNA and identity as one, technology becomes integral to identity formation. The analysis of my data argues the supe-

rior value of a social constructivist framework, focusing on similarities in DNA to promote social cohesion, while detailing and critiquing the ideology which is presently used by commercialized genetic technology companies iconizing DNA to identity.

a. Identity and Belonging

Group identity frameworks (present in genetic test results) play an important role in the lives of humans as social beings, who maintain a consistent interest in finding in-group belonging and do so by finding common connections with others and preexisting in-groups.⁸ The emotional need for in-group belonging is influential to existence within and movement between groups.⁹ Users of genetic tests note this need for belonging and look to find it in the tests; for example, a 23andMe user in a BuzzFeed video says, "I really hope that with this DNA test, I hope that I really do belong somewhere."¹⁰ The need to find meaning and belonging in a group is met by the tests as a variety of ethnic, national, and racial groups are presented as the results to any purchased DNA test.¹¹ Alongside the need to belong is the desire for optimal distinctiveness: the human need to belong and assimilate that often conflicts with the simultaneous desire to be distinctively different.¹² By using the tests, individuals can find new belonging in groups, but also receive a unique set of ethno-racial-national groups relative to their DNA, since every "DNA story is unique."¹³

Individuals find meaning within groups, connecting morals that extend from group practices to their individual identities.¹⁴ Identity groups, such as ethno-racial-national ones, are then significant to the salient behaviors and ideals of those who identify. Just as groups make up the individual, individuals make up

7 J. C. Turner, R. J. Brown, and H. Tajfel, "Social Comparison and Group Interest Ingroup Favouritism," *European Journal of Social Psychology* 9, no. 2 (June 1979); Marilyn B. Brewer, "The Psychology of Prejudice: Ingroup Love or Outgroup Hate?," *Journal of Social Issues* 55, no. 3 (1999).

8 Brewer, "The Psychology of Prejudice."

9 Turner, Brown, and Tajfel, "Social Comparison and Group Interest Ingroup Favouritism"; Jolle Demmers, *Theories of Violent Conflict: an Introduction* (London: Routledge, 2017) 42-44.

10 BuzzFeedVideo, "Asian Americans Take A DNA Test"; Data Set 2, Video 17.

11 Data Set 3.

12 Brewer, 476-480.

13 Data Set 1, Video 11.

14 Russell F. Korte, "A Review of Social Identity Theory with Implications for Training and Development," *Journal of European Industrial Training* 31, no. 3 (October 2007): 167-9.

the groups.¹⁵ Further, the behaviors of individuals and the ways in which they identify (for example, basing identity off of genetic tests) impacts larger social operations. Identity categorizations held by individuals can change over time, and categorizations themselves can change with new languages and national boundaries.¹⁶

b. Technology in Society

Consumer genetic technologies are one of the many aspects of technological and scientific developments integrated into human life. As science, technologies, and interfaces continue to advance, internet media consumption increases, and the implications media has on society are growing.¹⁷ Nonhuman factors, such as technology appealing to the need to belong, influence human norms, behavior, and social networks.¹⁸ As the technology use increases, humans become a part of technology and technology a part of humans.¹⁹ Even identity itself is impacted by technology through social media interactions, which offer alternative, newly constructed spaces to belong.²⁰ Genetic technologies are one technological advancement integrated into human lives, functions, and identity. The scientific technology used in commercialized genetic testing kits invite consumers to integrate technology into their self-ethno-racial-national identities.

The integration of technology into the human social, political, and cultural world makes the integration of DNA analysis technology into identity possible. This integration leads to behavior changes and altered notions of identity. The representation of science and technology in the media is trusted as

fact,²¹ which is beneficial for companies who aim to sell products, such as commercialized genetic tests, that can be marketed as scientific, and therefore, trustworthy. Specifically, genetic science, referred to by Americans as ‘salvatory,’²² makes this purchasable science technology even more trusted and appealing to consumers. The test results are marketed and perceived as being highly accurate, despite the fine print stating guesswork and large error margins in the results.²³ Overall excitement about results, minimal technical knowledge, and exclamations about the empirical demonstrate user’s trust in commercialized genetic science technology as it informs identity. “This is where science has taken us in 2018,” excitedly says a 23andMe user.²⁴ Technological and scientific synthesis with humanity (often through media) lays the foundation for commercialized genetic tests to successfully market their products as factual identity representations connecting DNA to ethno-racial-national frameworks and negate unaligned previously lived and learned identities.

c. DNA and Identity

Genomic science deeply converges with the socio-cultural-political world, far beyond the fields’ beginnings in basic molecular human biology. The expanding field intersects and impacts humanity by associating DNA with specific human subgroups. Historically, scientific publications geneticized identity as a justification for racial inequalities in society.²⁵ In the 19th century, ‘pure science’ used racial categorizations for genes and argued race as a result of hered-

15 Turner, Brown, and Tajfel; Brewer.

16 Ibid.

17 Oliver Boyd-Barrett, “Media Imperialism,” in *The Palgrave Encyclopedia of Imperialism and Anti-Imperialism*, eds. Immanuel Ness and Zak Cope (London: Palgrave Macmillan), 3.

18 Ramon Fernandes Lourenço and Maria Inês Tomaél, “Actor-Network Theory and Cartography of Controversies in Information Science,” *Pesquisa Brasileira Em Ciência Da Informação e Biblioteconomia* 14, no. 2 (2019).

19 Donna Jeanne Haraway, “Cyborg Manifesto,” in *Cultural Theory: An Anthology*, eds. Imre Szeman and Timothy Kaposy (Hoboken: Wiley, 2010), 454-7.

20 Wendy D. Roth and Biorn Ivemark, “Genetic Options.”

21 Caulfield and Bubelam, “Media Representations of Genetic Discoveries: Hype in the Headlines.”

22 Kaushik Sunder Rajan, “Salvation and Nation,” in *Biocapital: the Constitution of Postgenomic Life*, (Durham: Duke University Press, 2007).

23 Ibid.

24 Data Set 2, Video 4.

25 Peter J. Bowler, *The Mendelian Revolution: The Emergence of Hereditarian Concepts in Modern Science and Society* (London: Bloomsbury, 2015), 153.

itary inheritance, rather than as a socially constructed phenomenon.²⁶ Commercialized genetic tests revisit the historical integration between genetics and identity previously used to affirm racial hierarchies. This identity geneticization is more recently questioned by social constructivism theories focused on the 99% of genetic code shared between all human beings, in order to highlight similarities over difference.²⁷ Commercialized genetic tests and associated media revisit the integration of DNA and identity, but in this paper, the rhetorical analysis is rooted in a social constructivist framework.

Commercialized genetic tests reintegrate DNA with identity through connecting genetic markers with existing ethnic, racial, and national identities. Beginning around 2006, an increasing number of companies started selling products to individual consumers collecting personal data (DNA) and returning information about the ethnic, racial, and national categories associated with the genetic markers found in the consumer's genes, also referred to as 'your roots.'²⁸ These companies offer an opportunity for individuals and families to send in a DNA sample in order to make identity-based connections with countries around the globe.²⁹ These newly revealed identities may reaffirm previously learned heritage or home-based nationality, but can also negate such lifelong identities, possibly identifying new ones.³⁰ 23andMe, AncestryDNA, National Geographic Geno 2.0, and MyHeritageDNA are popular commercialized genetics companies, which

market their products through commercials and other advertisements.

Ethnic, racial, and national identity results may vary across time for individuals as more data is collected by the companies which categorize the genetic data into groups of contemporary and historical national boundaries.³¹ An individual who takes the test a year apart may receive different results about their roots each time.³² Varying results may also come from using different test brands.³³ Data from the tests are used for research, which causes some to question if commercialization is ethical.³⁴ What individuals or families do with their result is not greatly studied. This paper aims to understand how results are used and framed rhetorically, in order to uncover how DNA test results impact identity salience and formation.

Previously Constructed Lived Identities: DNA Result Framework

Nation, race, and ethnicity stand alone as constructed lived identity frameworks that impact lived experience but intersect with one another as well; these identities are used to categorize DNA for consumers using genetic tests. National communities are traditionally created based on history, which unites a pluralistic, widespread group in a unitedly sovereign community.³⁵ These imagined communities create a homogenous group identity that extends beyond intra-personal relationships, which are intensified through common narratives, practices, and symbols that unite

26 Bowler; Ann Morning, "Does Genomics Challenge the Social Construction of Race?," *Sociological Theory* 32, no. 3 (2014).

27 Philip N. Cohen, "How Troubling Is Our Inheritance? A Review of Genetics and Race in the Social Sciences," *Annals of the American Academy of Political & Social Science* 661, no. 1 (2015); Morning; "Does Genomics Challenge the Social Construction of Race?"; Saini, *Superior: the Return of Race Science*.

28 Sandra Soo-Jin Lee, "Race, Risk, and Recreation in Personal Genomics: The Limits of Play," *Medical Anthropology Quarterly* 27, no. 4 (December 2013).

29 Data Set 3.

30 Data Set 2.

31 Jess Kung, Gene Demby, and Shereen Marisol Meraji, "Is 'Race Science' Making Comeback?," *The Code Switch Podcast*, podcast transcript, July 10, 2019. <https://www.npr.org/sections/codeswitch/2019/07/10/416496218/is-race-science-making-a-comeback>

32 Ibid.

33 Ibid.

34 Timothy Caulfield et al., "Research Ethics Recommendations for Whole-Genome Research: Consensus Statement," *PLoS Biology* 6, no. 3 (2008).

35 Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 1991), 4-6.

individuals and smaller groups under the framework of the national imaginary.³⁶ Race and ethnicity are different group categorizations that constitute hierarchies within the nation, creating a variety of lived experiences that affect the lives of those within the groups.³⁷ Racial categorizations separate groups by certain phenotypic characteristics, with some categorizations prioritized over others within the nation.³⁸ For example in the United States, those who have higher levels of melanin are phenotypically darker in skin tone and are referred to as Black or as another minority group.³⁹ These groups are categorized as ‘other’ in comparison to white, unmarked, ‘normative’ members of the society.⁴⁰ Ethnic categorizations are rooted in cultural practices such as religion or language, and country of origin.⁴¹ An example of this is the Hispanic or Latinx heritage or culture. Inheritance or immigration origins separate ethnic majority and minority populations within a state or region.⁴² These separate populations often fit within different spaces of the national hierarchy, some receiving more political representation while others face daily discrimination.⁴³ Despite the constructed nature of these national, racial, and ethnic identity categories, the hierarchies and inequalities between groups create a lived experience in the socio-cultural-political world.⁴⁴ Genetic tests use these identity frameworks of nation, race, and ethnicity, but assign belonging based on DNA, which may or may not be aligned with lived experiences.

As commercialized genetic tests use existing national, ethnic, and racial categories as a basis for results, participation within groups shifts from lived experience to genetic markers.⁴⁵ Individuals are provided with group identification despite possible lack of lived experience. Users may alter their behavior or claim participation in a previously unassociated group, or simply speak about these identity categories in different ways.⁴⁶ Users receiving results from a commercialized genetic testing company may or may not have previous associations with these narratives, practices, and symbols, which makes their assumption of identity on the basis of DNA somewhat trivial. “Eleven-point-one percent French and German. Ah yes! Where’s my beret?!”, says an AncestryDNA user.⁴⁷ Group participation that has not been rooted in personal learned experience can also cause contention within and around groups themselves, even impacting politics. For example, a user who received less than 1% of Native American heritage in their DNA test results claiming Native heritage in Canada takes reclamation rights away from individuals who have lived as cultural Natives their entire lives, facing discrimination and racism.⁴⁸ The constructed categorizations of race, ethnicity, and nation create salient and complex lived identity experiences for group members, often including discrimination and lack of representation. These same categories are used to frame genetic test results, allowing individuals to choose identity groups

36 Eric Jorgenson et al., “Ethnicity and Human Genetic Linkage Maps,” *The American Journal of Human Genetics* 76, no. 2 (2005); M.R. Somers, “The Narrative Constitution of Identity: A Relational and Network Approach,” *Theory and Society* 23 (1994).

37 Hilary Parsons Dick, *Words of Passage: National Longing and the Imagined Lives of Mexican Migrants* (Austin, TX: University of Texas Press, 2018); Pradhan, 718.

38 Herbert Blumer, “Race Prejudice as a Sense of Group Position,” *Pacific Sociological Review* 1, no. 1 (1958): 3.

39 Jonathan Rosa and Nelson Flores, “Unsettling Race and Language: Toward a Raciolinguistic Perspective,” *Language in Society* 46, no. 5 (2017): 624.

40 Ibid.

41 Pradhan, 718.

42 Rosa and Flores, 624.

43 Demmers, *Theories of Violent Conflict*.

44 DeSalle and Tattersall, *Troublesome Science*.

45 Morning, “Does Genomics Challenge the Social Construction of Race?”

46 Data Set 2; Morning.

47 Data Set 2, Video 8.

48 Darryl Leroux, “‘We’ve Been Here for 2,000 Years’: White Settlers, Native American DNA and the Phenomenon of Indigenization,” *Social Studies of Science* (2018), 48; Roth, “Genetic Options.”

to newly participate in based upon their results rather than lived contextualization of identity.⁴⁹ In this, these ethno-racial-national groups may come to attain altered position and meaning.

Analysis & Findings

In collecting data from both commercials and reaction videos, an overwhelming percentage of videos included iconization between identity and DNA [100% of reaction videos and 85% of commercials iconized DNA to identity]. The iconization of DNA to identity within ethno-racial-national frameworks is presented as inherent through discourse that surrounds the tests. Messages presented in commercials, reaction videos, and on websites create a relationship between genetic DNA and the concept of ‘true’ identity, specifically ethno-racial identity, using existing constructed identity boundaries to index the two. These commercialized genetic tests offer individuals the opportunity to “Discover who you are” through kit results,⁵⁰ including regional DNA categorizations labeled by ethno-racial-national frameworks such as British and Irish, Southeast Asian, or Chinese.⁵¹ These labels are recurrences of existing modern imperialist ethno-racial-national guidelines dividing and categorizing the world through imagined communities.⁵² The ethno-racial-national boundaries influenced by existing frameworks are also limited to only those listed in the company’s bases and do not recognize lived socio-cultural-political experiences of those taking the test.⁵³

The iconization of DNA to ethno-racial-national identity is extended by the negation of previously learned identities. Discourse in both commercials and reaction videos shows the consumer being proven wrong, getting ‘true’ ancestral and heritage answers based on results, which are different or extended from learned or experienced identities. In 70% of reaction videos and 35% of commercials, there were one or more instances where previous identities were negated. By removing validity from learned identities if they do not show up as a DNA-based result, the notion

of DNA as the primary indicator of ethno-racial-national identity is further solidified.

Through commercials, self-discovery and true identity are common themes marketed alongside “science backed” products, creating concepts of self which are purchased.⁵⁴ Scientific language, images, and symbols present in the tests and commercials are used to validate this iconization of DNA and identity. By using numbers, statistics, charts, and other empirical data, the tests are marketed to be highly accurate and reliable. By using images and language related to science, those not familiar with genetic science are persuaded to trust each company’s analysis process which determines ethno-racial-national belonging based on DNA. The following analysis explores the discourse surrounding commercialized genetic tests and how they relate/iconize DNA to identity, negating previously learned identities and further validating the products using scientific rhetoric.

a. Ethno-Racial-National Discovery of Self Through DNA

Narratives presented in media surrounding genetic tests highlight concepts of self and self-discovery on the basis of DNA identified ethno-racial-national identity. The self-discovery narrative appeals to customers through the need to identify with a group in order to find belonging and meaning, while simultaneously being optimally distinct.⁵⁵ Cumulatively between the various DNA company commercials and reaction videos of users, self-discovery and identity are the basis for which these relationships between self and DNA are created through narratives and symbols in advertising.

The self-discovery narrative in commercials starts by addressing the consumer directly through deictics of person, using pronouns such as “you, yourself, yours”. Through 32 instances of language that iconized DNA to identity commercials, 18 included the use of you, yours, or your (56%). Using this language indicates to the person observing the commercials that they will personally be associated

49 Roth, 175-80.

50 Data Set 1, Video 20.

51 “DNA Genetic Testing & Analysis,” 23andMe, accessed January 20, 2020. <https://www.23andMe.com/>.

52 Anderson, *Imagined Communities*; DeSalle and Tattersall, *Troublesome Science*.

53 Caulfield et al., “Research Ethics Recommendations for Whole-Genome Research.”

54 Data Set 1.

55 Brewer.

with whatever claims are made in the commercial. For example, a National Geographic GENO2.0 commercial quotes, “Where did *you* and *your* family come from? It’s time to find out.”⁵⁶ The commercial goes on to say, “It’s *your* science and *your* story, the human story.”⁵⁷ In both instances, these uses of “*you*” and “*your*” engage the consumer personally, associating them with a life change or self-provided story by purchasing the product.

A notion of self-first brings the consumer into the narrative through deictic pronoun use, then connects a self-discovery journey to the product and further to the consumer’s DNA. The association is made between ethno-racial-national identity provided in the test results and DNA asserting ethno-racial identity and DNA as directly connected.⁵⁸ “It’s a human thing to know about yourself, and you can’t get any more knowing yourself than processing your DNA [...] I feel at peace with my identity [...] I feel complete.”⁵⁹ The phrase “to know about yourself” indicates that a viewer may not know about themselves, and it is very important to be able to do so. The remainder of the phrase provides the consumer with the solution: by “processing your DNA” consumers gain the ability to learn about themselves. By saying, “you can’t get any more knowing yourself than processing your DNA,” the phrase connects true self, as it is related to identity, to DNA directly, and devalues any other manner that one may come to know themselves through. In other words, the most valuable way to gain knowledge about one’s ‘self’ is through genetic code, a process which can be purchased through one of these companies. These notions of ‘self’ are then presented to the consumer through previously constructed ethno-racial-national identity frameworks, with which they may or may have not had any previous association.

After placing the consumer within the commercial’s storyline using deictics of person, the commercials often provide an example or promise of

self-discovery. This is depicted with words like “your journey” or “story” or “discover.” In a MyHeritageDNA commercial, a speaker states, “With MyHeritageDNA, *you’ll* discover who *you* are and where *you* come from.”⁶⁰ The concept of self, being rooted in “who you are,” as it is associated to “where you come from,” is discoverable through the use of these products.

Consumers are provided with an opportunity for self-discovery or a journey extending beyond the test used — to travel to new places, or practice new cultural practices. In a 23andMe commercial about the World Cup, individuals are depicted cheering for, wearing the colors of, or thinking about certain teams, which are associated with their test results and depicted as pie charts on the screen.⁶¹ The charts are highlighting their ethno-racial identity percentage associated with the country’s team that they are cheering for.⁶² “Can *you* feel it; you’re connected to the world cup. It’s in *your* DNA.”⁶³ The company offers to decode any individual’s DNA in exchange for connecting the consumer to a country and World Cup team. Individuals are further connected to previously unassociated countries through travel narratives or in general statements about the products *taking you* places.⁶⁴

Commercialized genetic test commercials and consumer reaction videos connect belonging and identity to DNA. Successfully iconizing DNA (and the analysis of DNA) to identity appeals to the need for optimal distinctiveness. Language centralizing the consumer to the tests appeals to discovering a new sense of self in DNA through ethno-racial-national identity groups provided in the results. This iconization occurs cross-configuratively through discourse in commercials, on websites, and in reaction videos. This shifts away from the notion that identity is learned through narrative and common experience, negating other ethno-racial-national identity assumption methods.

56 Data Set 1, Video 11.

57 Ibid.

58 Data Set 3.

59 Data Set 1, Video 6.

60 Data Set 1, Video 18.

61 Data Set 1, Video 1.

62 Ibid.

63 Ibid.

64 Ibid.

b. Negation of Learned and Lived Identities

By noting that journeys of true self and true identity can be discovered through the DNA coding process using a commercialized genetics company, there is an inherent and underlying notion that the self is not truly discovered in any other way. This suggests learned or experienced ethno-racial-national identity assumptions constructed through experience are not as valid as DNA-based identities. This is represented through discourse in commercials furthering the iconization of (ethno-racial-national) identity to DNA. Oftentimes, individuals already have ideas about their heritage, or have a strong connection to their native country, known as ‘learned heritage’ or ‘lived identity.’ Despite these learned and lived identities, discourse from commercialized genetic tests create the notion that “Genomics is the truth in why you are who you are.”⁶⁵ The claim that, “‘who you are’ is a result of genomics,” is made, therefore negating any other form of self. Full belief in DNA associated identities reported by test results is also paired with explicit negation of previously learned identities in both commercials and reaction videos. Discourse in 35% of commercials and 70% of reaction videos include consumers who explicitly negate their previously learned ethno-racial identities.

An AncestryDNA commercial follows a narrative about a man who grew up going to German dance classes and taking pride in his German identity. His results told him he was 17% German with a significantly higher Scottish identity percentage. The commercial shows him saying, “I decided to get my DNA tested through AncestryDNA, the surprise was, we are not German at all.” Despite his lifetime of German cultural experiences and personal ethno-racial identity assumption, this man is depicted as fully negating his culturally learned heritage to fully embrace his genealogically-based heritage. He concludes the commercial with “So I traded in my lederhosen for a kilt,” reaffirming he will take on the “true” identity provided by

the commercialized genetic test kit, while negating his learned identity. This shows how the media surrounding tests creates an association between true self or true ethno-racial identity and DNA, and also negates any associations other than DNA informing identity.

Reaction videos also include identity negation. Identity negation occurs through general discourse validating DNA-based results in opposition to lived and learned identities. There is also direct de-validation of identities unrelated to results. Though many reaction videos (70%) included instances of previous identity negation, 40% of reaction videos (8 videos) include instances of users questioning results or revalidating their lived experiences; “There’s a difference between your ethnicity and how you identify, and then your genetics.”⁶⁶ Rather, the identity negation in some reaction videos furthers the iconization between DNA and ethno-racial-national identity.⁶⁷ For example, a 23andMe sponsored video includes a woman who receives DNA-based results which are different from her learned and lived identity, but gives the DNA results full validity by saying, “Ok well I know nothing, I don’t know shit for dicks.”⁶⁸ Another user reduces their lived racial identity: “I’m a little bit less black than I thought.”⁶⁹ Other users negate their learned and lived identities by stating their life has been a lie: “What are you kidding?! 29.9% French and German, my life’s a lie.”⁷⁰ Another video’s title includes “I BEEN LIED TO MY ENTIRE LIFE,”⁷¹ and in a sponsored video the 23andMe representative says, “Your family is full of liars.”⁷² Life experiences associated with all experiences prior to receiving the DNA tests are either reduced, called a lie, or are negated completely by users, giving heavier weight to DNA-based test results identifying ethno-racial-national identity than lived and learned identity classifications.

The negation or reduction of previously learned and lived identities, expressed through discourse in commercials and reaction videos, furthers the iconization between DNA and ethno-racial-national-

65 Data Set 1, Video 2.

66 Data Set 2, Video 17.

67 Data Set 1.

68 Data Set 2, Video 2.

69 Data Set 2, Video 16.

70 Data Set 2, Video 8.

71 Data Set 2, Video 13.

72 Data Set 2, Video 1.

al identity due to the production and use of commercialized genetic tests. The ethno-racial-national identity frameworks in results are accepted as valid and true, even when they question identities previously assumed by individuals for their entire lives. Although the negation of previous identities is sometimes questioned by consumers in reaction videos, the language and symbols directly negating lived and learned identities, alongside discourse directly recognizing the results as valid and related to identity, furthers the iconization between DNA and ethno-racial-national identity. Presented in results, these notions of DNA as they are connected to self through association and negation are backed by discourse which connects science to the quality of results provided.

c. Rhetorical Scientific Validation

Scientific data and methods used by genetic testing companies are highlighted in language and symbols to further assert the relationship between ethno-racial-national identity and DNA. This use of science and scientific representation gives confidence to users about the tests' validity, and therefore the iconization of DNA to ethno-racial-national identity. The assertion that these tests and this type of science is extremely accurate, valuable, and life altering speaks to the notion of science in the media assumed to always be correct and almost divine.⁷³

The kit's scientific process, as provided by the 23andMe website is as follows: After purchasing and being sent a kit, a consumer spits into a tube as genetic information collection. The tube is sent back to the company, then the sample is collected and tested. The information is stored in the company's database and compared to other results, then sent back to the consumer with charts and information like "Ancestry Composition, Ancestry Detail Reports, Maternal & Paternal Haplogroups, Neanderthal Ancestry and a DNA Relatives Tool"; health data and other information are also included depending on the kit type purchased.⁷⁴

This is the science used by 23andMe. While

other companies may follow some different procedures, they generally use the same methods.⁷⁵ This means the genealogical heritage people receive in their kit's test results are based on the data collected by each individual organization. Therefore, test results could change over time and vary from company to company.⁷⁶ This subjective nature is not proposed in commercials on the websites, which advertise the products to consumers, but rather the opposite message is imposed.⁷⁷

The notion that science is of the utmost truth is the basis for these commercials' product validation. In *Biocapital: the Constitution of Postgenomic Life*, Rajan argues science, specifically science pertaining to internal genomic coding, is presented to and perceived by American consumers as salvatory.⁷⁸ Arguing consumers use products and services which collect and code genetic data as salvation, Rajan explains that this phenomenon uses language similar to religiosity and pure belief around consumer genetic technology.⁷⁹ Ideas about science being of utmost truth are present in consumer genetic technology advertising as seen through core messaging on websites, as well as through images and language emphasized in commercials.

The websites 23andMe, AncestryDNA, and MyHeritageDNA all have various subpages, each with headings providing the consumer with the company's slogans and messages. The following phrases are some headings within the associated websites: *23andMe: Genetic reports. Backed By Science. Our Rigorous Quality Standards*, | *Ancestry: Our cutting-edge DNA science is even better. So are your results.* | *MyHeritageDNA: The Highest Technological Standards.* | *MyHeritageDNA: Scientific Expertise.*

Each of these indicates the information being provided in the kit results is scientific in nature, aiming to legitimize each specific company's market through language and symbols associating validity with their use of a scientific process. 23andMe connects "genetic reports and science", highlighting that

73 Rajan, "Salvation and Nation."

74 "DNA Genetic Testing & Analysis," 23andMe.

75 Data Set 3.

76 Caulfield et al., "Research Ethics Recommendations for Whole-Genome Research."

77 Data Set 1.

78 Rajan.

79 Ibid.

information received in the genetic kits are backed by science, and therefore are valid. By also including “Rigorous Quality Standards” in this example of their marketing, these scientifically validated results are further affirmed to be of high value to consumers. These same companies also use language and signs in their commercials when associating identity and genetics to again affirm their validity through science. The representation of the science which is used is not in depth, but rather ambiguous and presented in relation to charts, diagrams and noting the word ‘science’ or ‘scientists.’ The commercials use language and show images of these various charts and data to highlight the scientific product’s quantitative nature.⁸⁰

In the commercial *Discovering New Insights Through DNA: Steven’s DNA Story*,⁸¹ the narrative commercial begins with the numbers and times “35,” “80,” “3:29,” and “3:30,” which flash with various colored backgrounds on the screen. The video continues with images of a young gentleman, Steven, who is training for a triathlon; running on a track, eating healthy foods, riding a bike, and swimming. Through the rest of the video, Steven talks about his obsession with data and numbers, calling himself a “data geek,”⁸² and his use of this knowledge to train as a triathlete. At 0:55 in the video, he begins to connect this notion of data and numbers to the 23andMe product, saying, “[...] the truth is in the numbers and I want to see them in my ancestry composition report.”⁸³ The high level of stamina and success portrayed in the video are Steven’s ability to train and succeed as a triathlete. He attributes this success to his use of data and numbers, things associated with science. The association of numbers and success are used as validation and applied directly to ancestry and ethno-racial-national identity. This is done throughout the whole commercial by paralleling Steven’s successful triathlete narrative with his 23andMe ancestry and health results, both of which share a scientific commonality, data-based information expressed using numbers. This

iconization of numbers and science to truth and success is also done in specific instances; for example, stating in the quote above: “the truth is in the numbers.”⁸⁴ By applying such notions of numbers to “my ancestry report,” and fitting it within the larger 23andMe commercial framework,⁸⁵ the language iconizes the company’s ancestry DNA products as similarly truthful and successful based on its use of science and numbers.

Specific linguistic and symbolic examples associating DNA products with science through charts, symbols, numbers, and scientific language are found throughout commercials and websites. Some note a paradigm shift, similar to when associations are made between identity and genetics such as “23andMe is reinventing the way you look at your ancestry, using science of genetics, your 23 pairs of chromosomes, your genetics.”⁸⁶ In this example, a shift to understand ancestry based on DNA is presented by using the word ‘reinventing,’ which is also associated with scientific language using ‘invention.’ Further, the phrase “the science of genetics” provides consumers with a new way to look at genetics, but in a way most people outside the genetic science field would not have an understanding of (which leads to a need to purchase the product). The scientific affirmation validity behind this shift in ancestral understanding is built upon “the science of genetics.” This continues by stating a part of the scientific process used and what is analyzed which is “23 pairs of chromosomes.” These identity associations of genetics and genetic testing to validity are visually represented to consumers as well, through depicting charts and data throughout the commercials and websites. The 23andMe logo itself contains various dots and different colored lines representative of genetic data.⁸⁷ In commercials, use of charts and data as visuals are representative of science and scientific methods connecting DNA and identity. In a 23andMe commercial, a woman points at colored lines and dots representing genetic data and says, “This is me,” as-

80 Data Set 3.

81 Data Set 1, Video 2.

82 Data Set 1, Video 2, 0:48.

83 Ibid.

84 Ibid.

85 Ibid.

86 Data Set 1, Video 5.

87 “DNA Genetic Testing & Analysis,” 23andMe.

sociating herself with these scientific representations, which are to indicate her DNA.⁸⁸

Commercialized genetic tests' validity, along with the messages they present, are reaffirmed through the scientific rhetoric present within commercials, reaction videos and websites.

Conclusion

Commercialized genetic tests hold the power to significantly affect the socio-cultural world in which they exist; understanding the impact they have on identity is one step in understanding how current genetic technologies impact human behavior at large. Identity as is expressed through group participation fulfills the human need to belong;⁸⁹ commercialized genetic tests play into this desire for group belonging. Marketed tests such as 23andMe, AncestryDNA, MyHeritageDNA, and NationalGeographicGENO2.0 easily integrate into society as science and technology already intertwine themselves with the daily lives of consumers. The frameworks of the tests are familiar: existing colonial ethno-racial-national boundaries categorize users' DNA based results. The use of these frameworks connect identity to DNA, revisiting the geneticization of identity and abandoning the unifying efforts of social constructivism. Media surrounding commercialized genetic tests uncover how DNA links to identity by consumers and the companies producing them through discourse patterns.

Data displayed in this paper exemplifies that discourse presented in media representing commercialized genetic tests in ads, reaction videos, and on company websites. It collectively iconizes a discoverable 'true' identity as rooted in a person's genetic makeup (DNA), understood as defined by one's group identity through previously constructed ethno-racial-national frameworks, all of which is re-affirmed through the negation of previously learned identities and the use of scientific discourse. A journey to new self-discovery is presented by way of connecting DNA to ethno-racial-national identity. This connection between DNA and identity is further affirmed by the negation of previously learned identities, which may leave behind valuable lived experiences to take on new identities. The connection between DNA and

identity, as well as the general validity and need for the tests, are affirmed by scientific discourse. Through the discourse surrounding commercialized genetic tests, it can be uncovered that products from companies like 23andMe, AncestryDNA, MyHeritageDNA, and NationalGeographicGENO2.0 have an impact on identity and the social world by connecting DNA to identity, negating previously lived and learned identities, and validating products through scientific rhetoric.

The research in this paper provides insight into the intersections between technology and society, specifically focusing on how commercialized genetic tests impact identity. Though Science and Technology Studies (STS) recognizes the intersections between social and hard sciences, further collaboration with other entities such as companies and policy makers would make for a more technologically equitable and accessible world. Science and the empirical are highly valuable and should be trusted, but their integration and specific use, especially in commercial consumption should be questioned. Policies and research surrounding the technology, science, and use of consumer genetic products can aid in mitigating harm that might occur by revisiting the reintegration of DNA and identity, which had previously been used to justify racism, genocide, and other forms of violence or inequity. Presently, companies do not distribute information from users test results that associate DNA to identity, but leaks or other changes could lead to discrimination on the basis of existing racial hierarchies if a user is found to have 'non-favorable' genetics. The tests are mostly used by consumers for fun to 'learn more' about themselves and their families by connecting with and assuming previously unassociated ethnic, racial and national identities. In many videos, the use of results to make this connection is related to trying new foods, making plans to travel, or simply boasting about their new identity.⁹⁰ Though this might be directly harmless, it can take away from the lived experiences if an individual is to begin to assume a previously unassociated identity. By claiming identities based on DNA rather than lived experience, the makeup and groups' integrity may be compromised, especially as mostly white people (with a significant

88 Data Set 1, Video 13.

89 Turner, Brown, and Tajfel.

90 Data Set 1; Data Set 2; Data Set 3.

amount of privilege) are taking these tests.⁹¹ Despite the discourse explored in this paper which uses scientific rhetoric, negation of previous identities, and the geneticization of identity to back these products, the limitations of science and of these types of tests, as well as possible social consequences, are important to consider as users integrate the results into their identities, their lives, and therefore into the world.

⁹¹ Morning, “Does Genomics Challenge the Social Construction of Race?”

Data Set 1 – Commercials

Video 1: 23andMe. “Root For Your Roots.”

Video 2: 23andMe. “Discovering New Insights.”

Video 3: David Blacker. “Ancestry.com - Kyle.”

Video 4: 23andMe. “Siblings Find Each Other.”

Video 5: 23andMe. “Reinventing Ancestry.”

Video 6: 23and Me. “Breaking Down Stereotype Barriers.”

Video 7: Black News Alert. “Ancestry.com Slave Commercial.”

Video 8: 23andMe. “Everyone Has a DNA Story”

Video 9: AdsOfBrands. “Ancestry DNA: Together Forever.”

Video 10: AncestryDNA. “Binky and Proudlock Discover Their AncestryDNA Results.”

Video 11: National Geographic. “Find Out.”

Video 12: AncestryDNA. “Michael.”

Video 13: 23andMe. “TV Spot.”

Video 14: 23andMe. “‘100% Nicole: Journey’ Song by Gertrude Lawrence.”

Video 15: 23andMe. “A Story about You.”

Video 16: AncestryDNA. “Kim.”

Video 17: AncestryDNA. “Katherine and Eric.”

Video 18: MyHeritageDNA. “What Makes You You.”

Video 19: MyHeritageDNA. “Discover Your Ethnic Roots this Holiday Season.”

Video 20: MyHeritageDNA. “‘Humanity’ Featuring Prince Ea.”

Data Set 2 – Reaction Videos

Video 1: BuzzFeedVideo. “The Try Guys Take An Ancestry DNA Test.”

Video 2: Ladylike. “We Took A DNA Test.”

Video 3: Alexisbelon. “SHOCKING - MyHeritage DNA Results!”

Video 4: Mayim Bialik. “My DNA Results REVEALED! 23andMe.”

Video 5: Itsbeebz. “ETHIOPIAN GENETICS RESULTS!!! | 23andMe Genetics Test.”

Video 6: Tamia Nicole. “What Am I Mixed With? 23andMe Results.”

Video 7: SweetMyrelle. “My DNA Results! | Who Am I?! | Last Minute Christmas Gift”

Video 8: Insider. “5 Brits Take A DNA Test.”

Video 9: JeffRowan10s. “My DNA Results: Anscen-

tryDNA vs 23andMe & thoughts about the slave trade.”

Video 10: BuzzFeedVideo. “Ethnically Ambiguous People Take A DNA Test.”

Video 11: The Di’Amore Family. “My 23andMe DNA Test Results!!! *SHOOK!*.”

Video 12: Kulana Arab. “Arabs Get A DNA Test”

Video 13: Arielle & Khalif. “READING MY ANCESTRY DNA RESULTS! I BEEN LIED TO MY ENTIRE LIFE!”

Video 14: Pero Like. “Afro Latinos Get Their DNA Tested.”

Video 15: Sofie’s World. “SHOCKED BY OUR DNA RESULTS | MyHeritage DNA Kit.”

Video 16: Tiffany Alex. “TAKING OUR DNA TESTS!”

Video 17: BuzzFeedVideo. “Asian Americans Take A DNA Test.”

Video 18: Zoey Arielle. “SHOCKING DNA TEST RESULTS! | MyHeritage DNA Kit.”

Video 19: Ida & Silvia. “ANCESTRY DNA: OUR SURPRISING RESULTS!”

Video 20: Shannen Oak. “HUSBAND’S SHOCKING 23andMe DNA TEST RESULTS.”

Data Set 3 – Websites

Website 1: 23andMe. “DNA Genetic Testing & Analysis.”

Website 2: Ancestry. “Your DNA Reveals More Than Ever Before - From Your Origins To Your Families Health.”

Website 3: My Heritage. “Amaze Yourself.”

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