

# Between a (Racial) Group and a Hard Place: An Exploration of Social Science Approaches to Race and Genetics, 2000-2014

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# Investigating Race and Genetics Over a Century

- On-going project covering research in the biomedical and social sciences, 1900-2015
  - Will include articles published in 40 peer-reviewed journals including interdisciplinary journals
  - Data collected include information such as citation counts, author educational and institutional affiliations, funding for publications, and datasets, biomarkers and health outcomes used in empirical research.
- Overarching research questions:
  - How have scholars conceptualized and subsequently operationalized race in genetics-related research in the biomedical and social sciences from 1900 to 2015?
  - To what degree have different theoretical and methodological approaches to race and genetics driven academic production regarding race, difference, and inequality from 1900 to 2015?
- Current study focuses on social science publications on race and genetics in the post-genome mapping era (2000-2014)

# Race and Genetics as Contested Racial Conceptualization

- Discussions of race and genetics entered a new phase of critique and debate after the mapping of human genome.
  - Special issues of the *American Journal of Sociology* and the *ANNALS of the American Academy of Political and Social Sciences*
  - Comments and replies in *Demography*
  - Expansion of sole-authored and edited volumes in area
- Critiques emphasize racialized lenses used intentionally and inadvertently in research
  - Use of genetic material in social surveys
  - Influence of genetic, genomic and epigenetic work on racial ideology, particularly biological determinism and racial essentialism
  - Race and scientific innovation

# Floating Racial Conceptualization

- Racial conceptualization is the interrelated set of beliefs about race that crystalize into racial concepts that “are working models of what race is, how it operates, and why it matters” (Morning 2011: 9-10).
  - A mixture of essentialist, anti-essentialist, cultural, and social constructionist views of race and its connection to genetics.
  - Rarely does a person only use one form to discuss race, difference, and inequality.
  - Influences scholars, their students, and the larger public (Benjamin 2013; Bliss 2012; Byrd and Ray 2015; Condit et al. 2004a, 2004b; Graves 2001; Morning 2011; Phelan et al. 2013; Reardon 2005; Shim et al. 2014)
- Racial conceptualization always changing with scientific innovation and public discourse.
- Recognizes that social scientists, similar to biomedical scientists, do not hold a monolithic view of race and difference.

# Floating Racial Conceptualization

- In combination with Hall's (1997) "floating signifier of race" approach, we can examine the ever-changing meanings and histories used to (re)conceptualize race and populations.
  - Acknowledges that race acts as a discursive language imposed on bodies
  - Influences understanding of racial difference, history, and inequality
  - Part of the examination of how race "gets under the skin"
- The increasing use of biomarkers in relation to population health and social behavior differences among social scientists warrants more attention
  - Shed light on how genetic and environmental factors are contextualized and interpreted around racial health disparities.
  - Intertwined beliefs about race, culture, nature, and science marks the "output problem" (Conley 2009) facing scholars using biomarker data in connection with social science surveys.

# The Use of Race in Genetics: Previous Examinations

- Work of Catherine Lee on National Cancer Institute-funded genetics projects (Friedman and Lee 2013; Lee 2009)
  - Variety of categories used for race and ethnicity
  - If race is used as a variable in analyses
  - How grant proposals positioned race in relation to health outcomes
- Examination of race-related genetics publications in biomedical journals (Best and Byrd 2015)
  - Three genetics-based journals (*American Journal of Human Genetics*; *Behavior Genetics*; *PLOS Genetics*) (n= 336 articles)
  - Increase in race-related genetics articles from 2000-2013
  - “White only” samples used frequently to control for population variation
  - Studies utilized multiple conceptions and groupings of race
    - Can influence interpretations of health disparities

# Data

- Selected four of highly-cited social science journals using ISI Web of Knowledge Journal Citations Reports
  - *American Journal of Sociology*
  - *Biodemography and Social Biology*
  - *Demography*
  - *Journal of Health and Social Behavior*
- Searched each journal's database for articles discussing race and genetics
  - Search terms included “gene” and either “race”, “ethnicity”, or “ancestry”
  - Initial search resulted in 883 articles; after clearing irrelevant and miscellaneous search-related hits, final sample was 165 articles.
  - *American Journal of Sociology* (n= 22)
  - *Biodemography and Social Biology* (n= 47)
  - *Demography* (n= 49)
  - *Journal of Health and Social Behavior* (n= 47)

# Article Coding

- Articles coded for the following:
  - Basic article information
  - Conceptualization of race used by author(s)
  - Identities and groupings used by author(s)
  - Operationalization of race in empirical articles
- Basic article information included:
  - Year published
  - Title of article
  - First and last (if more than one author) author's names
  - Number of authors on article
  - Type of article
    - Empirical (n= 121)
    - Comment or reply (n= 6)
    - Editorial commentary (n= 5)
    - Other publications such as theoretical or literature reviews (n= 33)



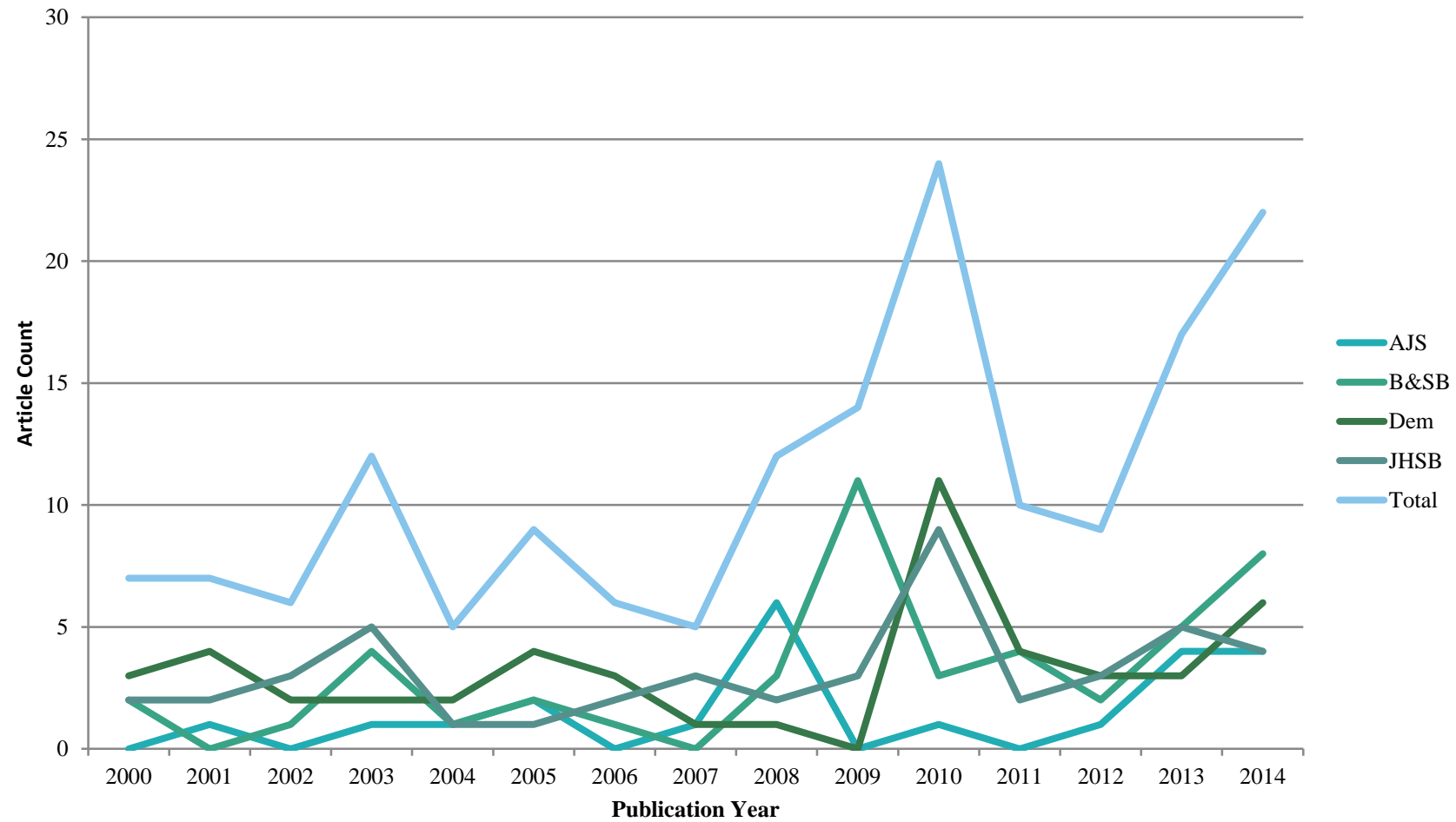
# Article Coding

- Racial conceptualization coding of articles:
  - Race
  - Ethnicity
  - Ancestry
  - Phenotype
  - Genotype
  - Clines/clinal class
  - Culture
  - Population/population group
  - All codes for each form of conceptualization included associated words (ex: racial group for “race”)
- Codes not mutually exclusive as authors can use multiple approaches to conceptualizing race (Bliss 2012; Morning 2011).

# Article Coding

- Identities and groupings used in reference for race:
  - Coded articles for approximately 290 categories used to group racial and ethnic populations.
    - U.S. Census-derived categories (22 total possibilities)
    - International HapMap (6 total possibilities)
    - Human Genome Diversity Project (48 possibilities)
    - For-profit ancestry companies (215 possibilities)  
(23andMe, AncestryDNA, African Ancestry)
- Operationalization of race (empirical articles):
  - Reference to demographics or sample characteristics of data
  - Sole population study
  - Race as a “control variable”
  - Stratified results by race/ethnicity
  - Self-identified race and/or ethnicity (SIRE) used for grouping and analyses
  - Dataset(s) analyzed in article

# Articles discussing race and genetics published, 2000-2014



# Racial Conceptualization across four social science journals, 2000-2014

Journal	Racial Conceptualization													
	Race		Ethnicity		Ancestry		Phenotype		Genotype		Culture		Population	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
AJS	21	95.5	20	90.1	6	27.3	6	27.3	2	10.0	8	36.3	5	22.7
B&SB	40	85.1	36	76.6	14	29.8	7	14.9	13	27.7	5	10.6	43	91.5
Dem	45	91.8	44	89.8	7	14.3	4	8.2	3	6.1	2	4.1	26	53.1
JHSB	42	89.4	43	91.5	7	14.9	3	6.4	1	2.1	9	19.1	40	85.1
<i>Means Test</i>				e					a,d,e			a,b,f		a,b,c,d,f

Notes: AJS-American Journal of Sociology; B&SB-Biodemography and Social Biology; Dem-Demography; JHSB-Journal of Health and Social Behavior. Percentages calculated for each journal total (AJS= 22; BS&B= 47; Dem=49; JHSB= 47).

<sup>a</sup> Significant means difference between American Journal of Sociology and Biodemography and Social Biology.

<sup>b</sup> Significant means difference between American Journal of Sociology and Demography.

<sup>c</sup> Significant means difference between American Journal of Sociology and Journal of Health and Social Behavior.

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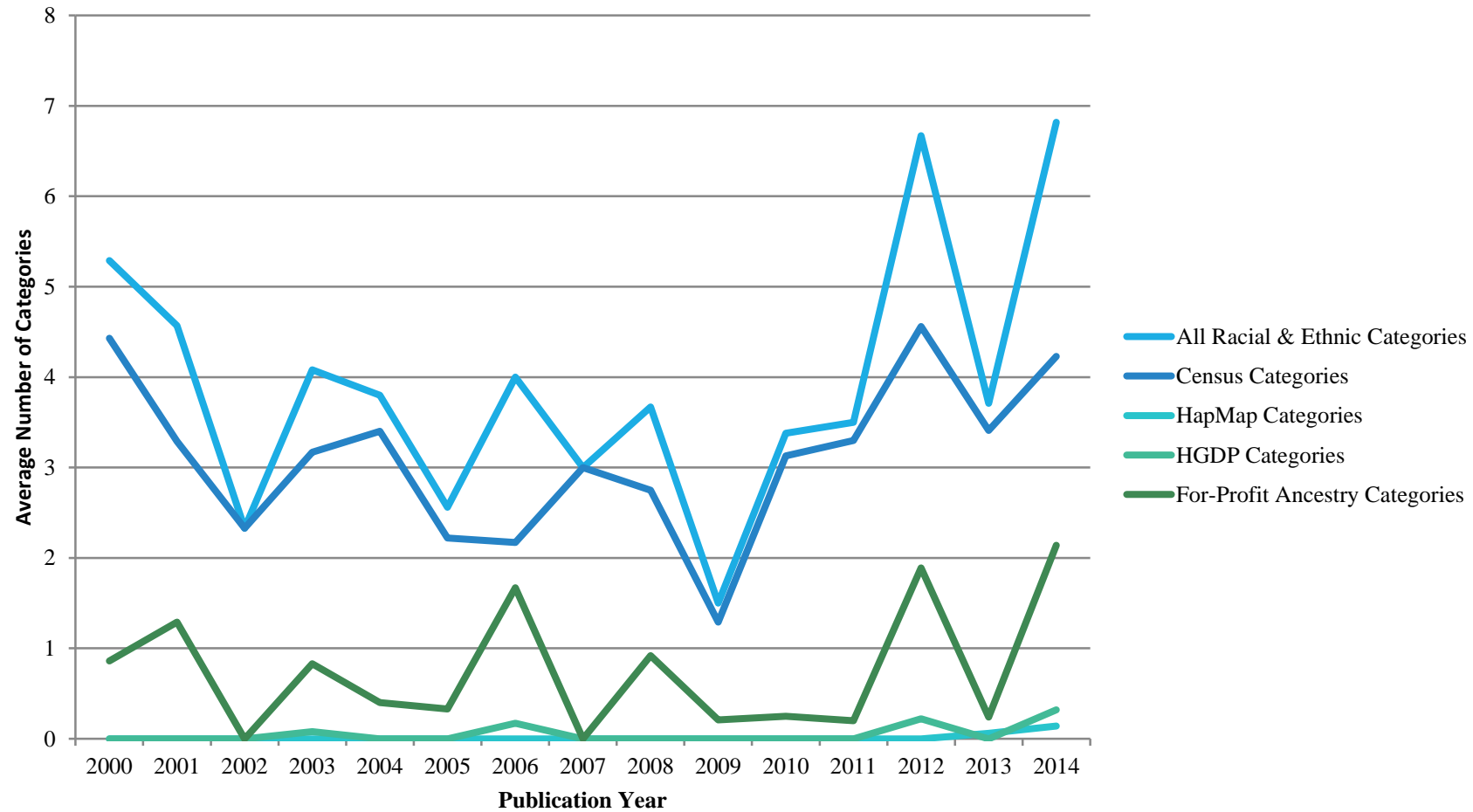
# Crosstabulation of Racial Conceptualization Forms

	Racial Conceptualization													
	Race		Ethnicity		Ancestry		Phenotype		Genotype		Culture		Population	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Race	<b>148</b>	<b>89.7</b>												
Ethnicity	126	76.3	<b>143</b>	<b>86.7</b>										
Ancestry	32	19.4	28	17.0	<b>34</b>	<b>20.6</b>								
Phenotype	19	11.5	17	10.3	12	7.2	<b>20</b>	<b>12.1</b>						
Genotype	17	10.3	15	9.1	15	9.1	10	6.1	<b>19</b>	<b>11.5</b>				
Culture	19	11.5	23	13.9	10	6.1	5	3.0	5	3.0	<b>24</b>	<b>14.5</b>		
Population	102	61.8	98	59.4	29	17.8	16	9.7	19	11.5	19	11.5	<b>114</b>	<b>69.1</b>

Note: Percentages calculated from total articles in sample (n= 165) and represent articles that used particular form of racial conceptualization alone or in combination with another form.

- Top datasets used:
  - Add Health (22 articles)
  - NLSY 1979 (11 articles)

# Racial/Ethnic Categories Used in Articles Discussing Genetics



# Comparison of Two Racial/Ethnic Categories

Racial or Ethnic Category	N	% of Total	% of Group Total
<i>Whites</i>			
Non-Hispanic white	30	18.2	14.8
Hispanic white	1	.6	.5
Caucasian	16	9.7	7.9
European	23	13.9	11.3
White (general)	110	66.7	54.2
Other category	23	13.9	11.3
<i>Blacks</i>			
Non-Hispanic black	23	13.9	10.6
Hispanic black	1	.6	.5
African American	70	42.4	32.1
African	21	12.7	9.6
Black (general)	96	58.2	44.0
Other category	7	4.2	3.2

Note: Other noted category for whites and blacks are groupings mentioned by authors not mostly exclusive to HapMap, HGDP, or for-profit ancestry company categories.

# Use of Race in Empirical Articles Discussing Race and Genetics

Journal	Implementation of Race									
	Sample Defined		Sole Population		SIRE		Control Variable		Stratified Analyses	
	N	%	N	%	N	%	N	%	N	%
AJS	15	75.0	1	5.0	10	50.0	11	55.0	6	30.0
B&SB	28	87.5	5	15.6	24	75.0	27	84.4	10	31.3
Dem	36	92.3	3	7.7	24	61.5	32	82.1	14	35.9
JHSB	28	93.3	4	13.3	22	73.3	27	90.0	3	10.0
Total	107	88.4	13	10.7	80	66.1	97	80.2	33	27.3
<i>Means test</i>							a,b,c		e,f	

Notes: SIRE-self-identified race and/or ethnicity; AJS-American Journal of Sociology; B&SB-Biodemography and Social Biology; Dem-Demography; JHSB-Journal of Health and Social Behavior. Percentages calculated for empirical articles in each journal total (AJS= 20; BS&B= 32; Dem=39; JHSB= 30); total percentages calculated for total empirical articles in sample (n=121)

<sup>a</sup> Significant means difference between American Journal of Sociology and Biodemography and Social Biology.

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# Multiple Forms of Race

- A fairly broad range of racial conceptualization forms utilized by social scientists
  - A combination of race and ethnicity frequently used (ex: ethnic-racial)
  - Race and ethnicity as distinct population groups also frequently used
- The use of multiple forms indicate that as the social sciences incorporate genetic data and analyses into their studies, the assumption that race is a measurable population takes hold.
  - Raises the question of how race is considered a “population”?
  - How do we understand “stratification” in relation to race and genetics?
  - Why is race used in particular ways?

# SIRE as Praxis of Race and Genetics

- SIRE often used in empirical article as proxy for purported genetic variation
  - Devoid of important context of self-identifying, particularly for multiracial/multiethnic individuals (Harris and Sim 2002; Lee and Bean 2007).
  - Categories used are quite U.S.-centric.
  - Similar approaches in biomedical sciences, increasing the diversity among the approaches to diversify (or not) populations (Braun and Hammonds 2012).
- Current approach similar to “selective engagement” in biomedical research around race and genetics (Outram and Ellision 2010):
  - Constant grappling with group definitions, interpretations of results, and how to incorporate race into genetic and genomic work.
  - “...leave[s] room for scientists to acknowledge the limitations of racialized categories and engage with these arguments, while, at the same time, continuing to emphasize the utility of racialized categories in their work (Outram and Ellision 2010: 110).

# Selling “Racial” Differences to the Social Sciences

- Increasing presence of for-profit ancestry companies’ categories in race and genetics articles.
- Important to note the shifting lines of what is considered different “populations.”
  - Nation-states sometimes treated as homogenous and distinct populations
    - Ex: French, Italian, Russian
  - Regions of continents are noted to be distinct
    - Ex: West African
  - Population groups spanning multiple nation-states, but supposedly different
    - Ex: Mandinka in Gambia and Senegal
- Cautionary note as for-profit ancestry data is becoming more available for analysis
  - Need for constant awareness of how samples and groupings were constructed to interpret any differences found in analyses.

# (Re)conceptualization and Reification?

- The current analyses indicate the shifting approaches taken to conceptualize and operationalize race in discussions of race and genetics in the social sciences.
- Indicates the need for further collaboration not only across disciplines, but also within those same disciplines across research areas.
  - Needed to further scientific innovation and understanding of societal outcomes and processes.
  - More methodological engagement by social scientists with biomedical scientists.
- Future research will include:
  - All 15 social science journals
  - Analyses of biomarkers and analytic techniques used by social scientists
  - Examination of the influence of past theoretical and methodological discussions of race and genetics influence current and future research in the area.

# Thank You!

Comments and Questions:

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