Racism & Health Equity

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June 2024

Problem solver Original Meme

3 Comments Share Save ...

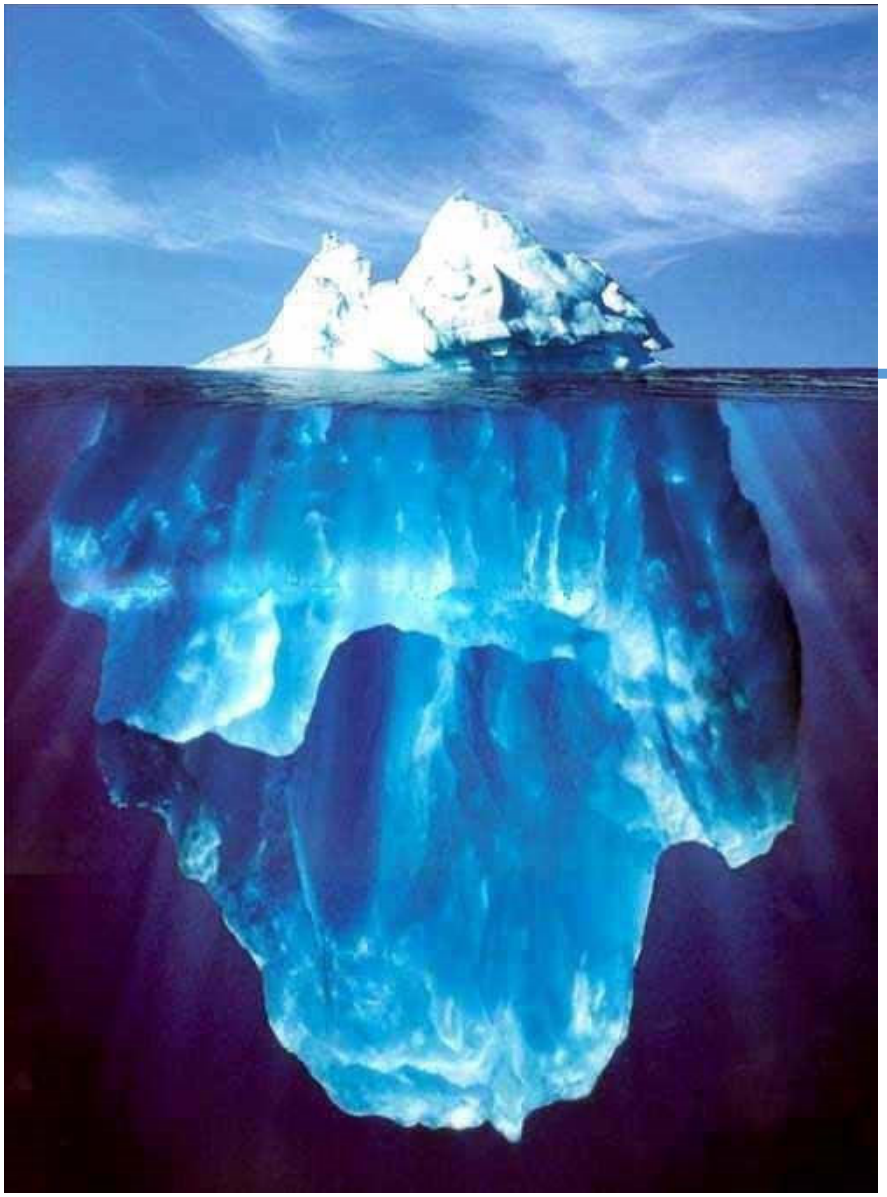
Remember - everyone who looks Chinese is suspect from now on. If they cough anywhere in public, act visibly distraught. Make them feel like they're a plague victim in the height of the Black Death. If they confront you about it, act like you're scared for your life, and if you're armed, consider protecting your life at their expense. If you kill someone whom you believe to be an immediate danger to you, you have a good chance to be acquitted, especially if you don't talk to the cops and get a lawyer.
Escalation is acceleration.

1763 6:13 AM

Sustained Scientific Interest

- **U.S. Surgeon General**
  - Mental Health, Culture, Race & Ethnicity, 2001
- **World Health Organization**
  - Mental Health: New Understanding, New Hope, 2001
- **National Research Council**
  - Measuring Racial Discrimination, 2004
  - Measuring Housing Discrimination, 2002
- **American Medical Association**
  - Pledge to Confront Racism, 2020
- **NIH**
  - Science of Research on Discrimination and Health, 2011
  - UNITE
- **Institute of Medicine / National Academy of Medicine**
  - Unequal Treatment, 2003
  - Structural Racism & Rigorous Models of Inequality Workshop, 2022

Easy to observe
Overt
Interpersonal



Easy to observe
Overt
Interpersonal

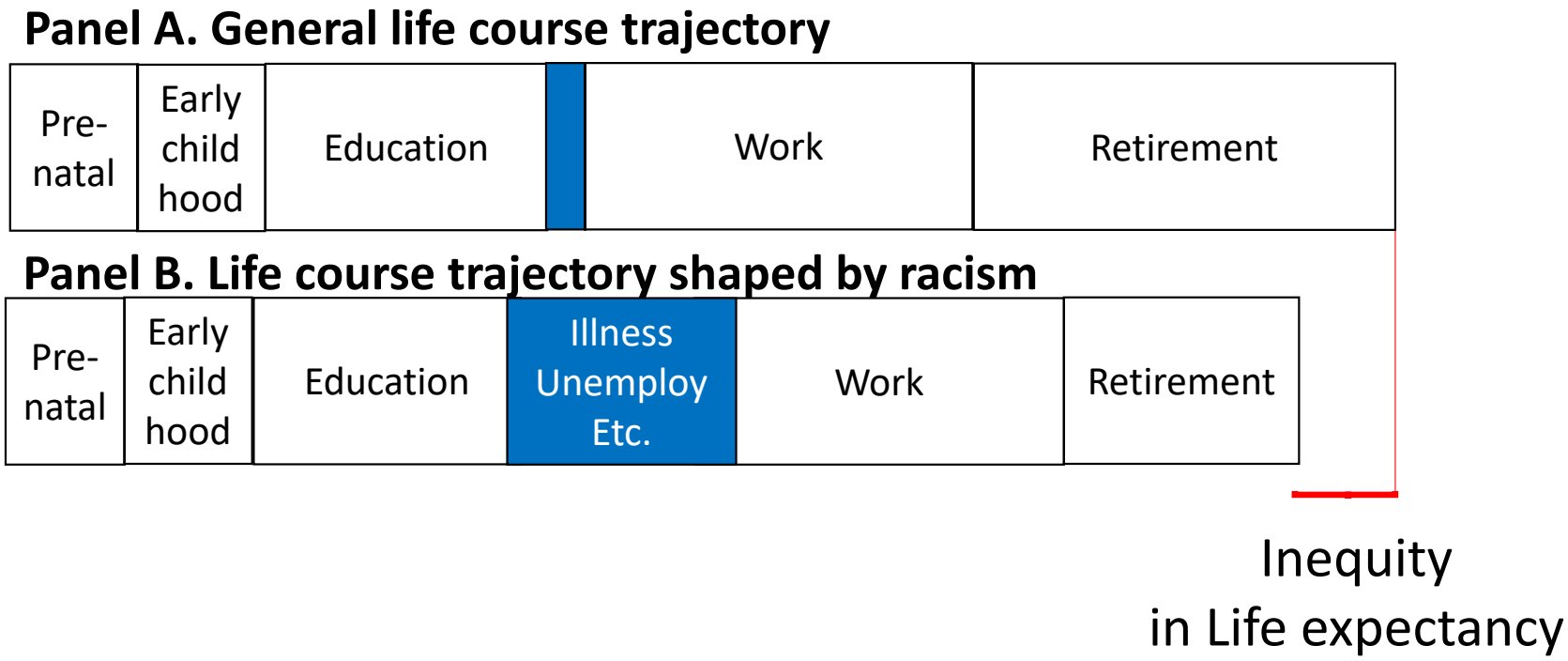
Hard to observe
Covert
Structural

Gee, et al., 2009. Epidemiologic Reviews. 31(1):130-151

Figure 1. Conceptual Model of How Racism May Shape Time Over the Life Course

Panel A. General life course trajectory

Figure 1. Conceptual Model of How Racism May Shape Time Over the Life Course



Gee, et al. (2012). AJPH. 102(5):967-974.

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Health Equity

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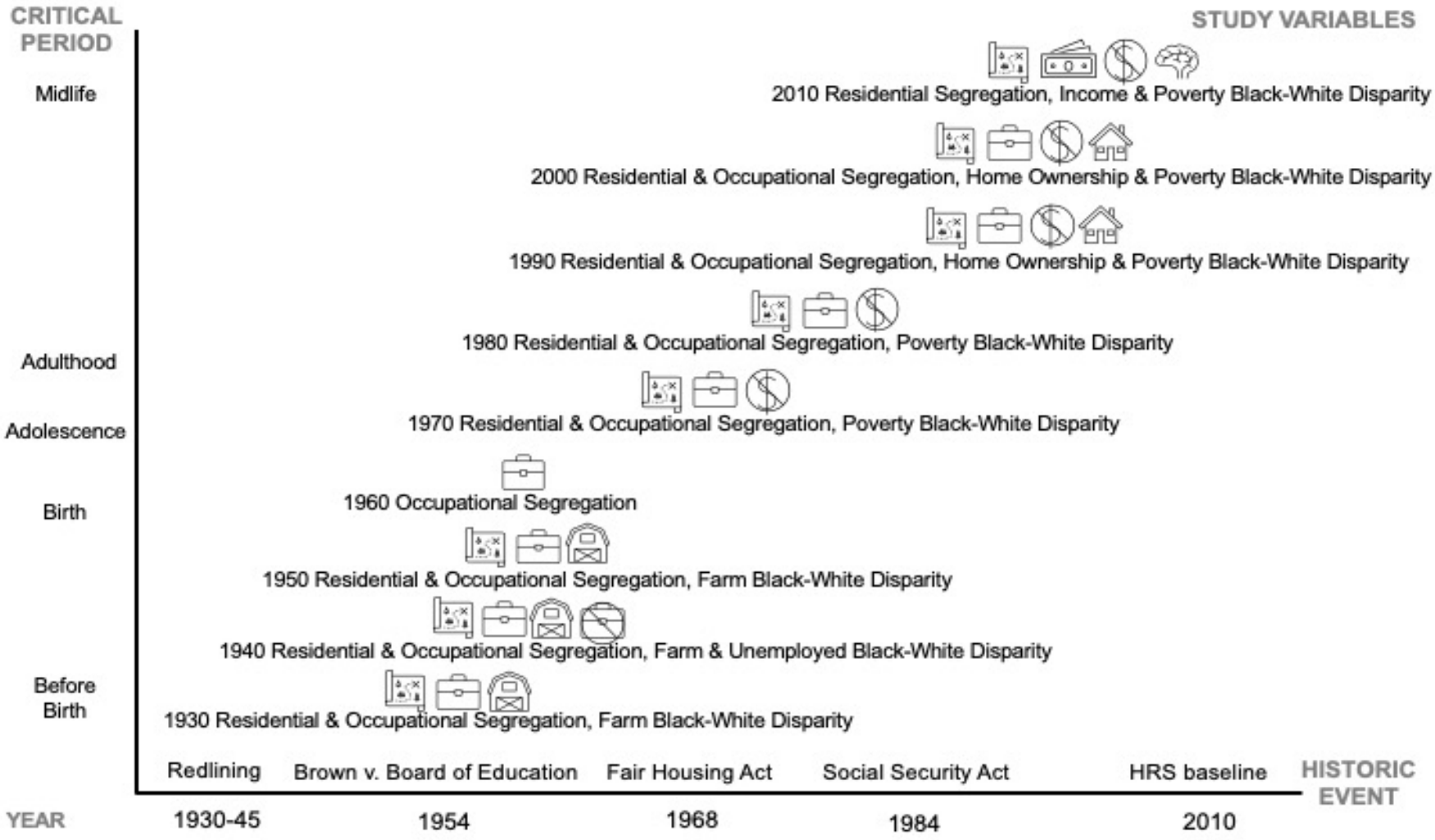
ORIGINAL RESEARCH Open Access

"Hang Ups, Let Downs, Bad Breaks, Setbacks": Impact of Structural Socioeconomic Racism and Resilience on Cognitive Change Over Time for Persons Racialized as Black

Paris B. Adkins-Jackson,[1,2,*] Boeun Kim,[3] César Higgins Tejera,[4] Tiffany N. Ford,[5,6] Ariana N. Gobaud,[1] Kyler J. Sherman-Wilkins,[7] Indira C. Turney,[8] Justina F. Avila-Rieger,[8] Kendra D. Sims,[9] Safiyyah M. Okoye,[10,11] Daniel W. Belsky,[1,12] Tanisha G. Hill-Jarrett,[13] Laura Samuel,[3] Gabriella Solomon,[1] Jack H. Cleeve,[1] Gilbert Gee,[14] Roland J. Thorpe, Jr.,[15] Deidra C. Crews,[16] Rachel R. Hardeman,[17] Zinzi D. Bailey,[18,19] Sarah L. Szanton,[3] and Jennifer J. Manly[8]

Life course structural socioeconomic racism by critical period, year, and historic event for Mid-Baby Boomers racialized as Black born 1954-59

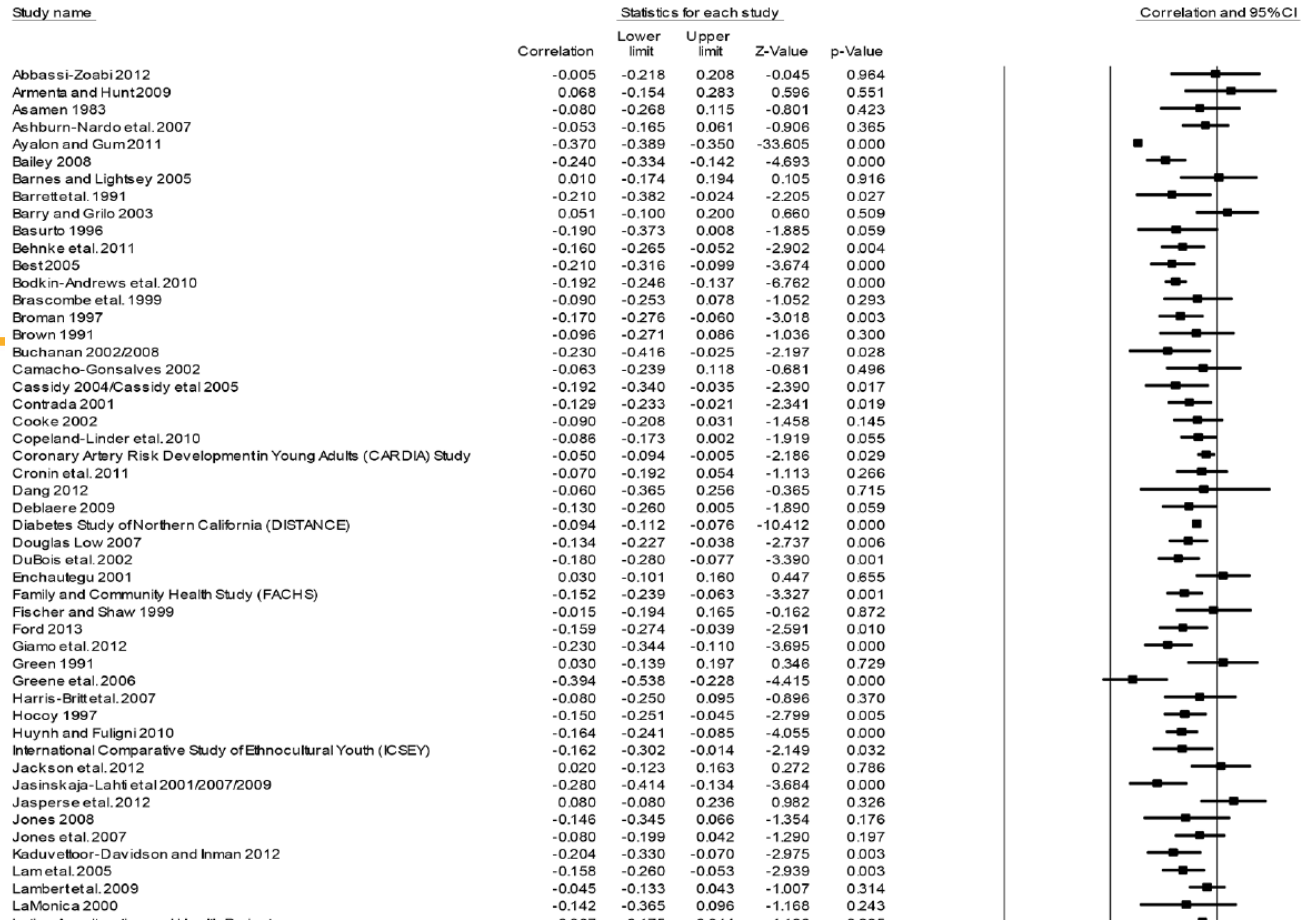


PLOS ONE

RESEARCH ARTICLE

Racism as a Determinant of Health: A Systematic Review and Meta-Analysis

Yin Paradies[1]*, Jehonathan Ben[1], Nida Denson[2], Amanuel Elias[1], Naomi Priest[3], Alex Pieterse[4], Arpana Gupta[5], Margaret Kelaher[6], Gilbert Gee[7]

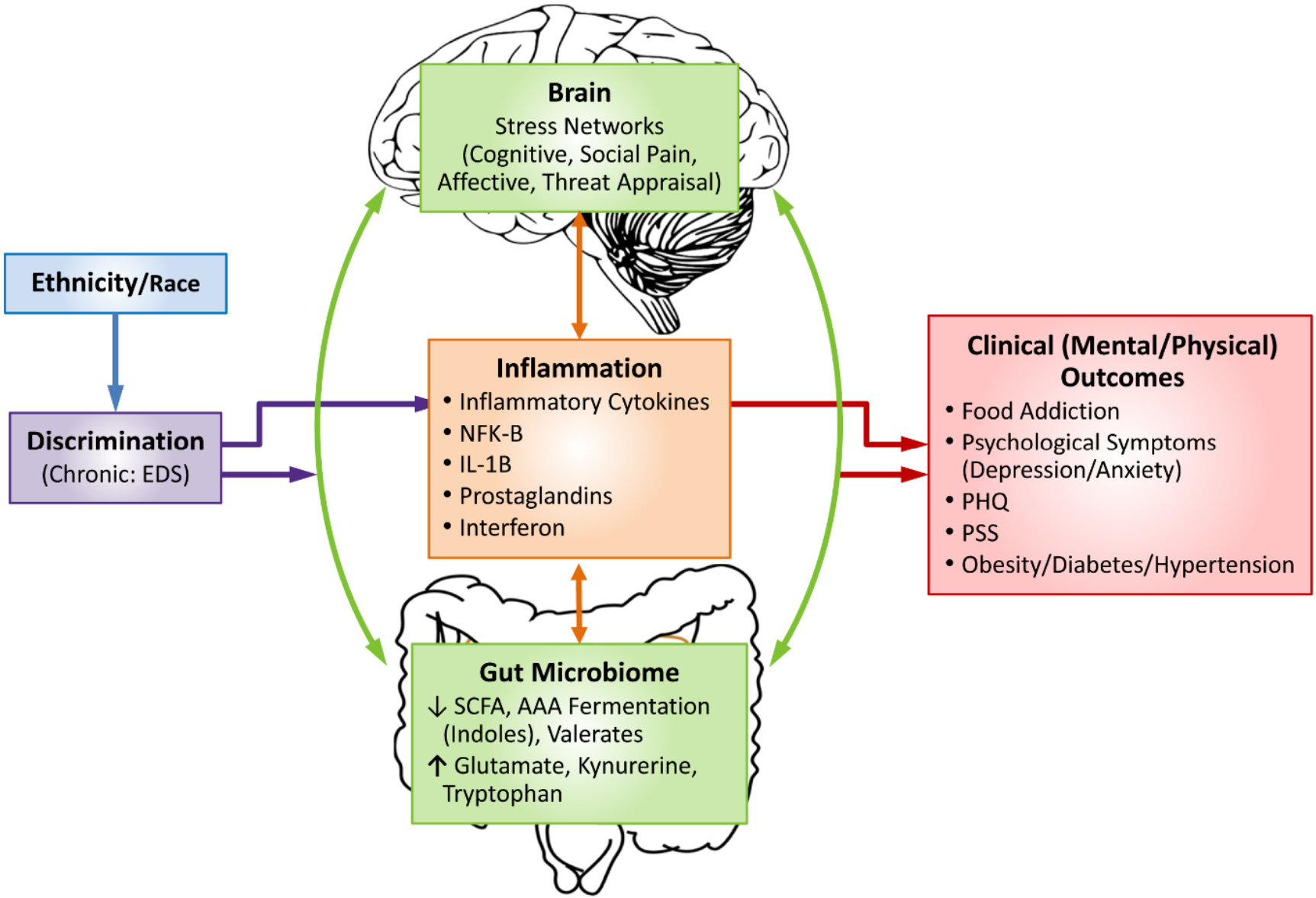


Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Abbassi-Zoabi 2012	-0.005	-0.218	0.208	-0.045	0.964
Armenta and Hunt 2009	0.068	-0.154	0.283	0.596	0.551
Asamen 1983	-0.080	-0.268	0.115	-0.801	0.423
Ashburn-Nardo et al. 2007	-0.053	-0.165	0.061	-0.906	0.365
Ayalon and Gum 2011	-0.370	-0.389	-0.350	-33.605	0.000
Bailey 2008	-0.240	-0.334	-0.142	-4.693	0.000
Barnes and Lightsey 2005	0.010	-0.174	0.194	0.105	0.916
Barrett et al. 1991	-0.210	-0.382	-0.024	-2.205	0.027
Barry and Grilo 2003	0.051	-0.100	0.200	0.660	0.509
Basurto 1996	-0.190	-0.373	0.008	-1.885	0.059
Behnke et al. 2011	-0.160	-0.265	-0.052	-2.902	0.004
Best 2005	-0.210	-0.316	-0.099	-3.674	0.000
Bodkin-Andrews et al. 2010	-0.192	-0.246	-0.137	-6.762	0.000
Brascombe et al. 1999	-0.090	-0.253	0.078	-1.052	0.293
Broman 1997	-0.170	-0.276	-0.060	-3.018	0.003
Brown 1991	-0.096	-0.271	0.086	-1.036	0.300
Buchanan 2002/2008	-0.230	-0.416	-0.025	-2.197	0.028
Camacho-Gonsalves 2002	-0.063	-0.239	0.118	-0.681	0.496
Cassidy 2004/Cassidy et al 2005	-0.192	-0.340	-0.035	-2.390	0.017
Contrada 2001	-0.129	-0.233	-0.021	-2.341	0.019
Cooke 2002	-0.090	-0.208	0.031	-1.458	0.145
Copeland-Linder et al. 2010	-0.086	-0.173	0.002	-1.919	0.055
Coronary Artery Risk Development in Young Adults (CARDIA) Study	-0.050	-0.094	-0.005	-2.186	0.029
Cronin et al. 2011	-0.070	-0.192	0.054	-1.113	0.266
Dang 2012	-0.060	-0.365	0.256	-0.365	0.715
Deblaere 2009	-0.130	-0.260	0.005	-1.890	0.059
Diabetes Study of Northern California (DISTANCE)	-0.094	-0.112	-0.076	-10.412	0.000
Douglas Low 2007	-0.134	-0.227	-0.038	-2.737	0.006
DuBois et al. 2002	-0.180	-0.280	-0.077	-3.390	0.001
Enchautegu 2001	0.030	-0.101	0.160	0.447	0.655
Family and Community Health Study (FACHS)	-0.152	-0.239	-0.063	-3.327	0.001
Fischer and Shaw 1999	-0.015	-0.194	0.165	-0.162	0.872
Ford 2013	-0.159	-0.274	-0.039	-2.591	0.010
Giamo et al. 2012	-0.230	-0.344	-0.110	-3.695	0.000
Green 1991	0.030	-0.139	0.197	0.346	0.729
Greene et al. 2006	-0.394	-0.538	-0.228	-4.415	0.000
Harris-Britt et al. 2007	-0.080	-0.250	0.095	-0.896	0.370
Hocoy 1997	-0.150	-0.251	-0.045	-2.799	0.005
Huynh and Fuligni 2010	-0.164	-0.241	-0.085	-4.055	0.000
International Comparative Study of Ethnocultural Youth (ICSEY)	-0.162	-0.302	-0.014	-2.149	0.032
Jackson et al. 2012	0.020	-0.123	0.163	0.272	0.786
Jasinskaja-Lahti et al 2001/2007/2009	-0.280	-0.414	-0.134	-3.684	0.000
Jasperse et al. 2012	0.080	-0.080	0.236	0.982	0.326
Jones 2008	-0.146	-0.345	0.066	-1.354	0.176
Jones et al. 2007	-0.080	-0.199	0.042	-1.290	0.197
Kaduvettoor-Davidson and Inman 2012	-0.204	-0.330	-0.070	-2.975	0.003
Lam et al. 2005	-0.158	-0.260	-0.053	-2.939	0.003
Lambert et al. 2009	-0.045	-0.133	0.043	-1.007	0.314
LaMonica 2000	-0.142	-0.365	0.096	-1.168	0.243

2015

“I think something that keeps coming up to mind is if I want to bring a child into the world that’s going to experience systematic oppression. …I know that these stressors that I’ve experienced the last 5, 10 years are stressors that more than likely will continue and will affect not only my physical well-being and mental well-being, but also my child’s wellbeing… Latina

Nguyen, et al., 2023 J Racial & Ethnic Health Disparities 10:30078-3017


Brain
Stress Networks
(Cognitive, Social Pain,
Affective, Threat Appraisal)
Ethnicity/Race
Discrimination
(Chronic: EDS)
Inflammation
• Inflammatory Cytokines
• NFK-B
• IL-1B
• Prostaglandins
• Interferon
Clinical (Mental/Physical)
Outcomes
• Food Addiction
• Psychological Symptoms
(Depression/Anxiety)
• PHQ
• PSS
• Obesity/Diabetes/Hypertension
Gut Microbiome
↓ SCFA, AAA Fermentation
(Indoles), Valerates
↑ Glutamate, Kynurerine,
Tryptophan

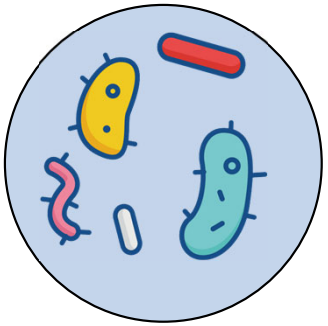
Participants

- Healthy volunteers in Los Angeles clinics & community
- n=154 adults

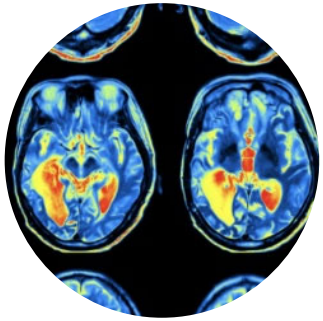
- Excluded
  - Antibiotics/probiotics w/in 3 months
  - Used medications affecting CNS
  - Over 400 lbs
  - Left handed
  - Peri/post menopausal

Study Procedures

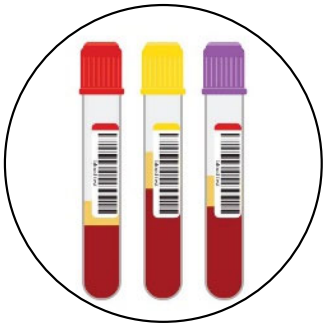
Survey



16S rRNA/
Metabolites



fMRI



PBMC

Experiences of Discrimination Vary by Race/Ethnicity

Reason for Discrimination	Black
Ancestry	20.0%
Gender	60.0%
Race	75.0%
Age	35.0%
Religion	0.0%
Height	15.0%
Weight	25.0%
Physical Appearance	15.0%
Sexual Orientation	0.0%
Education or Income	5.0%
Physical Disability	0.0%
Skin Color	55.0%
Other	0.0%
Total number of reasons (mean)	3 (2.1)

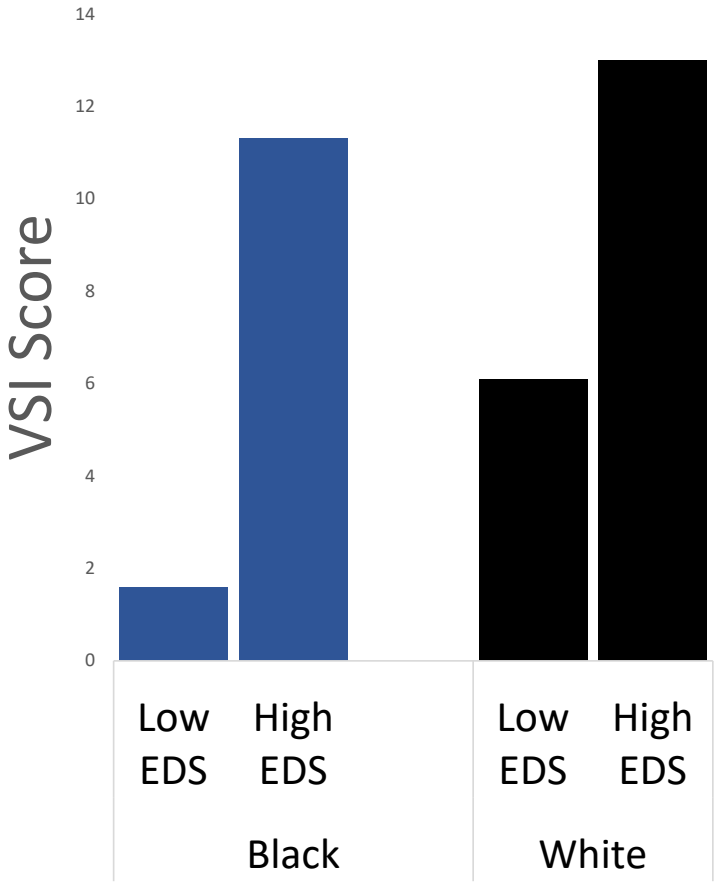
Experiences of Discrimination Vary by Race/Ethnicity

Reason for Discrimination	Black	Hispanic	Asian	White	p-value
Ancestry	20.0%	27.4%	12.9%	7.5%	0.065
Gender	60.0%	38.7%	29.0%	32.5%	0.138
Race	75.0%	45.2%	38.7%	15.0%	**<0.001**
Age	35.0%	30.6%	19.4%	22.5%	0.502
Religion	0.0%	4.8%	9.7%	5.0%	0.601
Height	15.0%	8.1%	6.5%	12.5%	0.674
Weight	25.0%	30.6%	12.9%	15.0%	0.154
Physical Appearance	15.0%	22.6%	22.6%	17.5%	0.877
Sexual Orientation	0.0%	11.3%	0.0%	2.5%	0.065
Education or Income	5.0%	19.4%	3.2%	10.0%	0.109
Physical Disability	0.0%	0.0%	3.2%	0.0%	0.333
Skin Color	55.0%	21.0%	12.9%	12.5%	**0.002**
Other	0.0%	9.7%	12.9%	12.5%	0.403
Total number of reasons (mean)	3 (2.1)	2.55 (2.37)	1.53 (1.45)	1.53 (1.45)	**0.02**

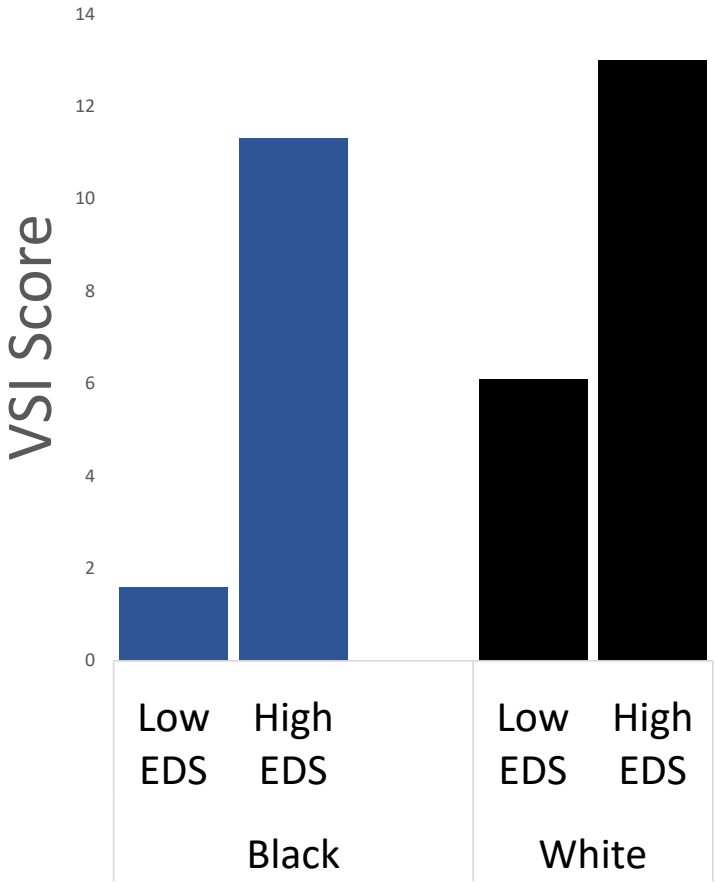
Survey Responses by Discrimination (n=154)

	Low EDS	High EDS	Sig.
Early Trauma Inventory	3.6 (4.3)	5.5 (4.4)	***
Perceived Stress Scale	10.8 (5.7)	14.8 (6.4)	***
IPIP Neuroticism	20.1 (6.3)	23.1 (7.6)	**
IPIP Extraversion	36.1 (7.0)	34.3 (7.1)	
Subjective Social Status	6.3 (1.4)	5.8 (1.5)	+
PHQ-9 Score	4.5 (3.8)	5.9 (4.2)	*
State-Trait Anxiety Inventory	30.9 (7.5)	35.6 (10.7)	***
HADS Anxiety	4.2 (3.6)	5.9 (3.7)	***
HADS Depression	1.8 (1.8)	2.9 (2.9)	***
Visceral Sensitivity Index	7.2 (10.1)	15.4 (17.7)	***
SF-12 Physical Score	54.2 (3.1)	52.4 (5.6)	*
SF-12 Mental Score	53.1 (6.3)	49.7 (9.4)	**
Resilience (CDRISC)	80.5 (12.0)	76.9 (13.3)	+

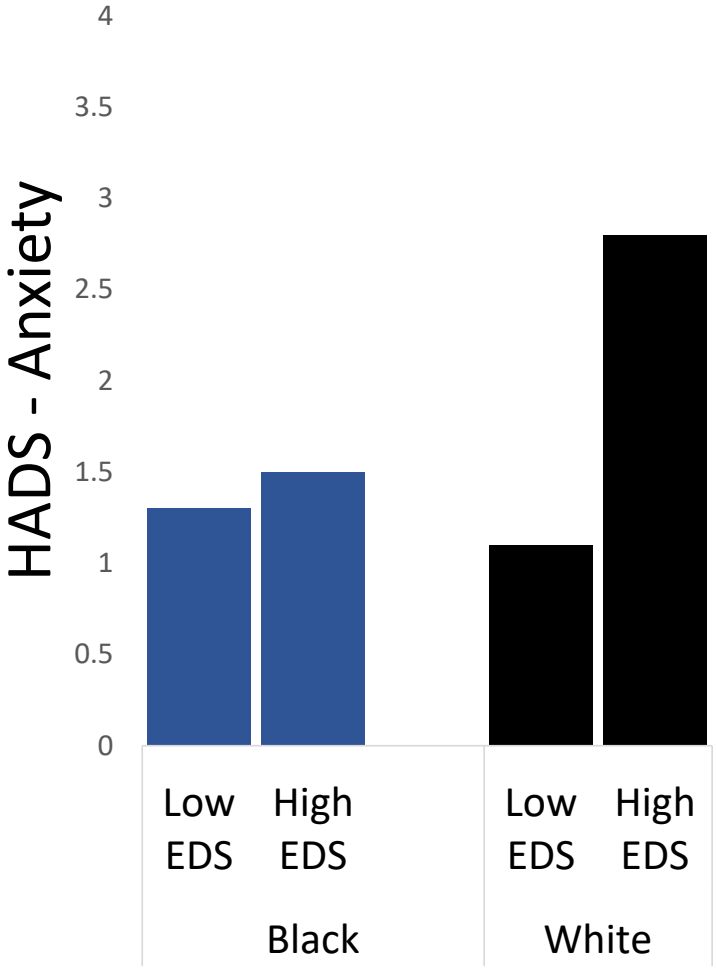
Visceral Sensitivity by Race and Discrimination



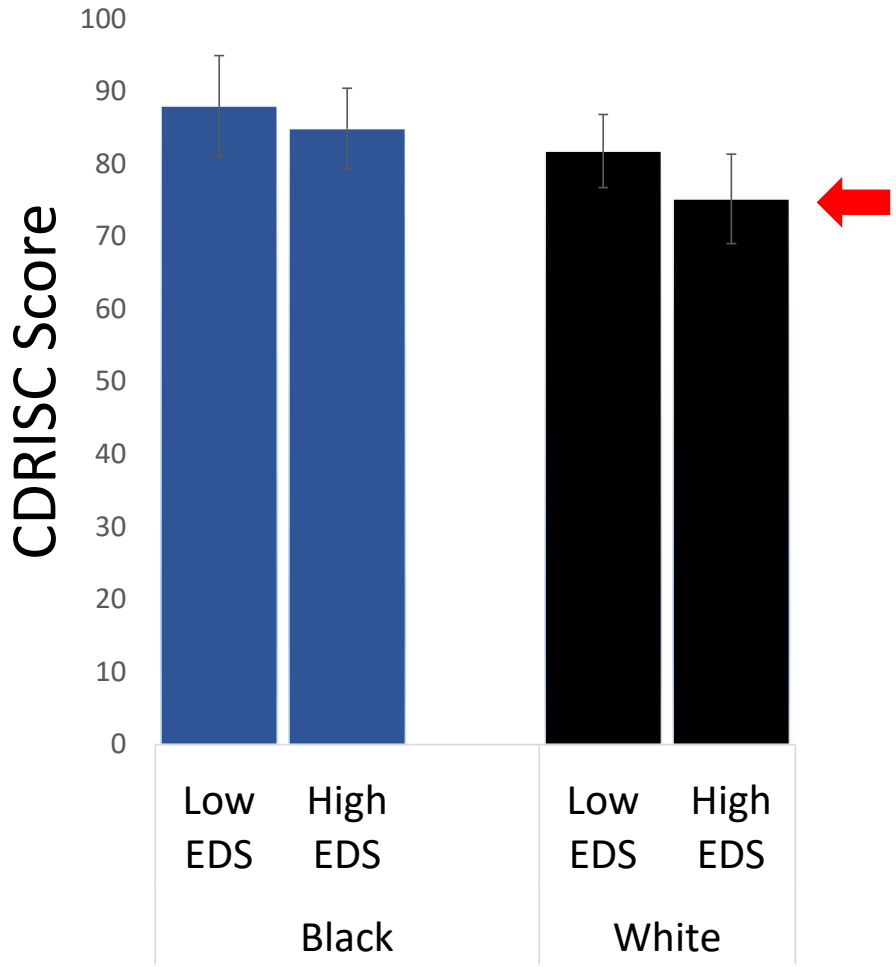
Visceral Sensitivity by Race and Discrimination



Anxiety by Race and Discrimination

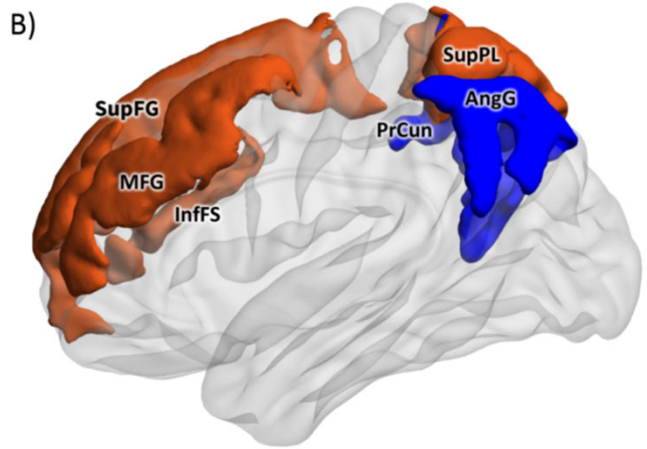


Resilience by Race and Discrimination



Brain Regions Associated with Discrimination by Race

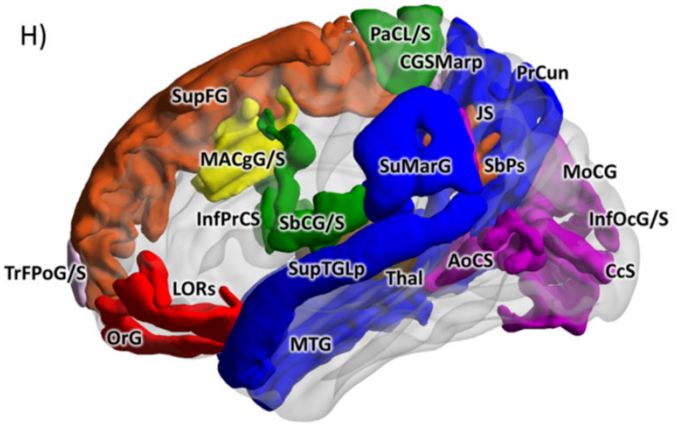
African American



DMN and CEN

Self-recollection
Emotional regulation
Inhibitory control during stress

White

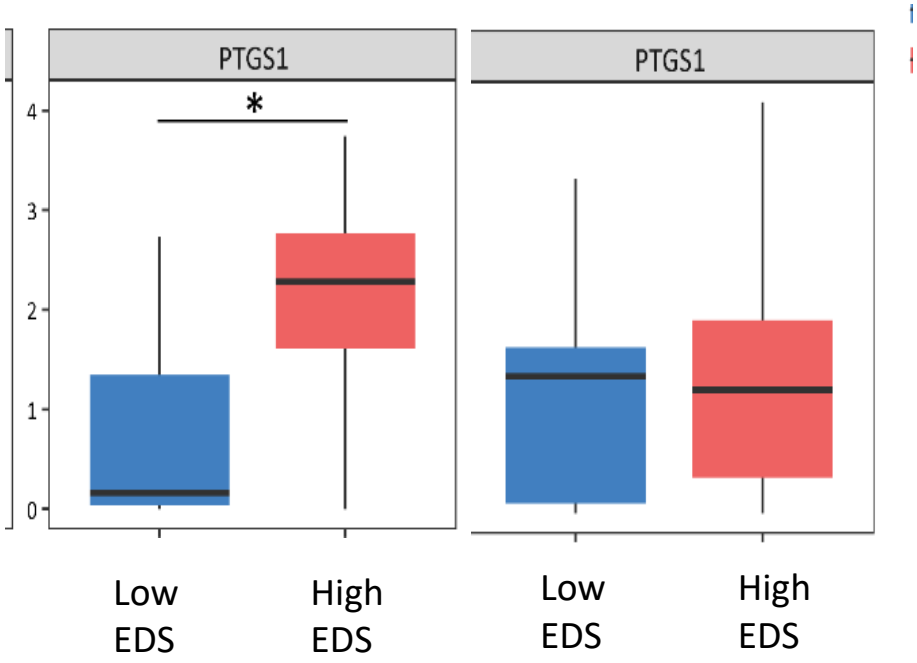


DMN, CEN, ERN, RN, SMN, SAL, CAN, and OCC

Heightened sensitivity
Difficulty coping

Central Autonomic Network (CAN)
Central Executive Network (CEN)
Default Mode Network (DMN)
Emotional Regulation Network (ERN)
Occipital Network (OCC)
Reward Network (RN)
Salience Network (SAL)
Sensorimotor Network (SMN)

Evidence of Inflammatory Response to Discrimination

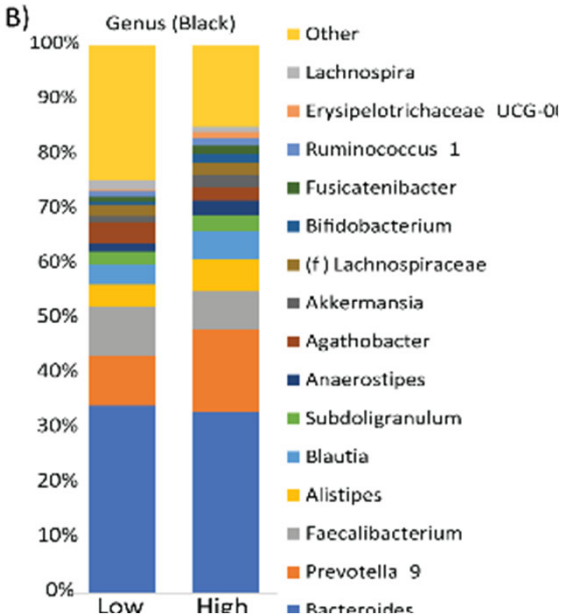


African American

White

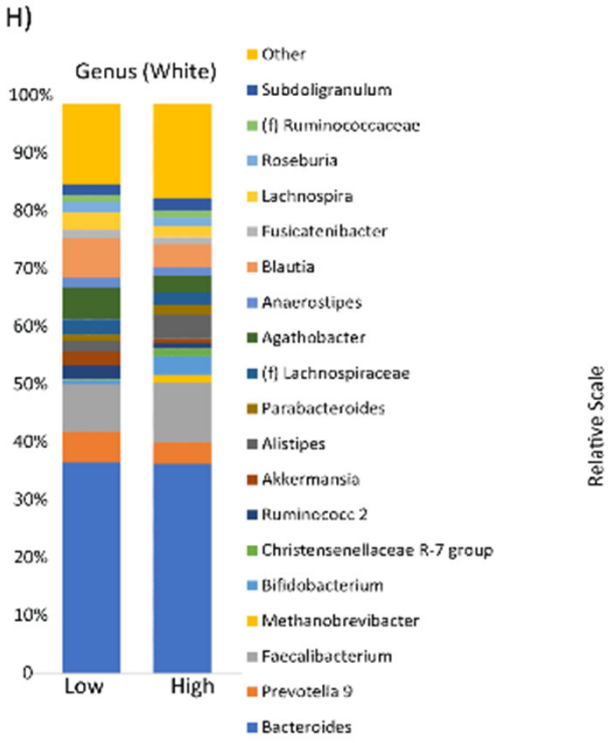
Fecal Microbiome/Metabolite

African American



↑ Prevotella copri, s.1, 9s.1
↑ Coproccus s.1
↑ Tyzzerella

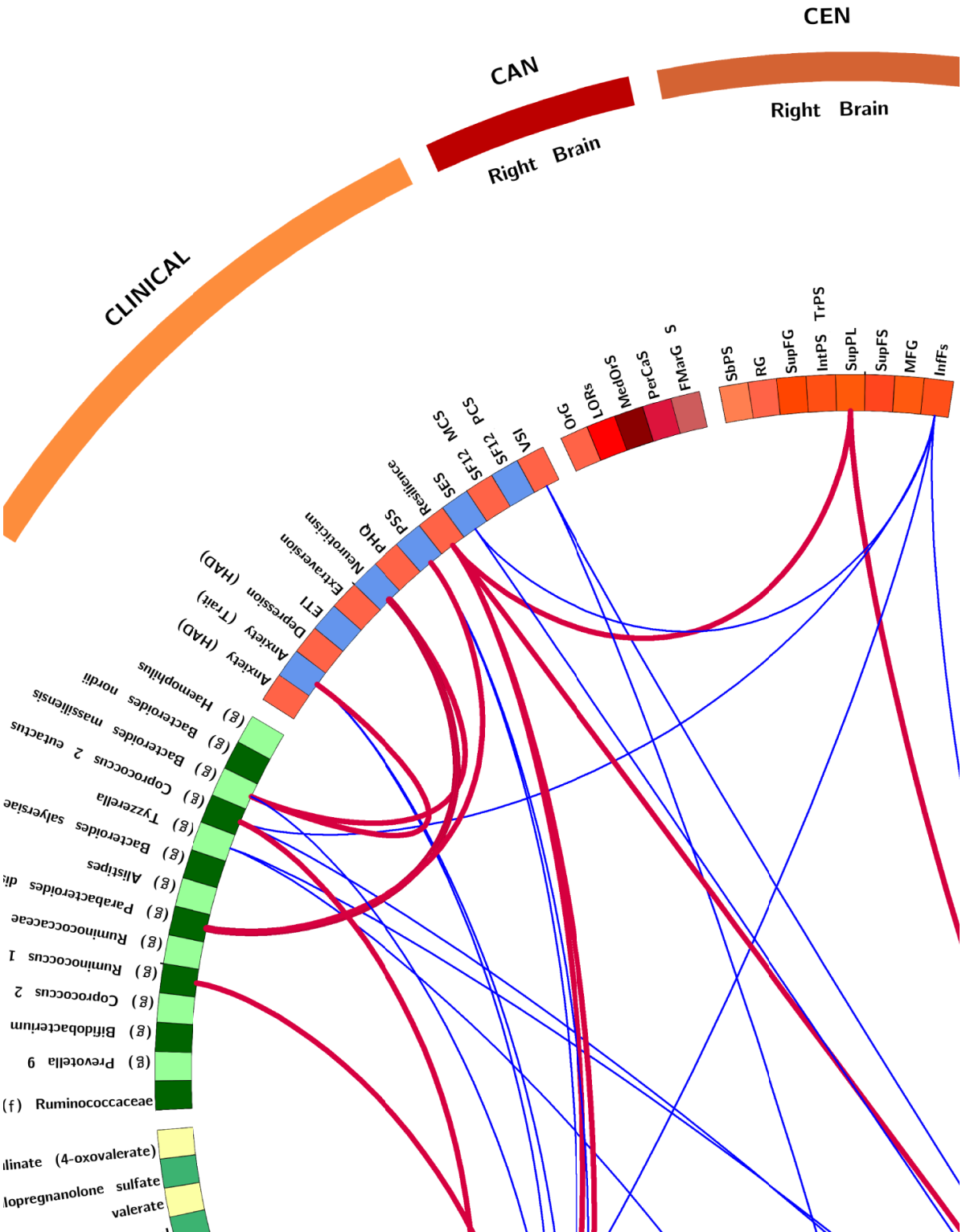
↓ Bacteriodes massiliensis, salyersiae
↓ Parabacteriods
↓ Ruminococcaceae



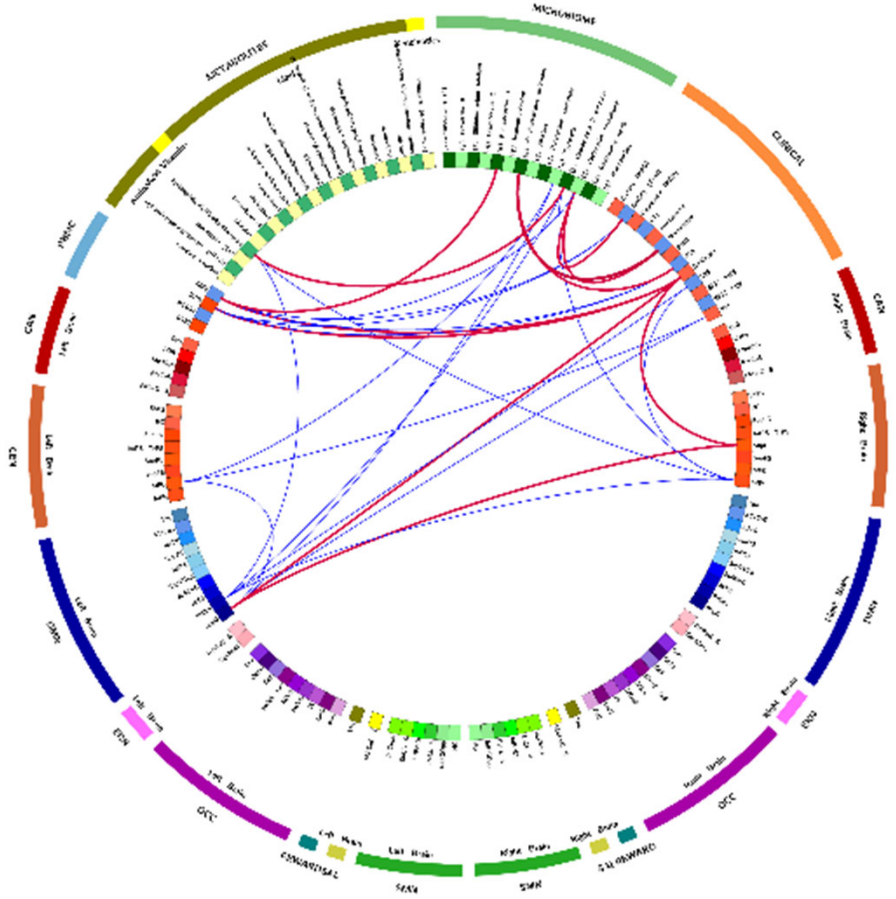
White

↑ Catenibacterium mitsuokai

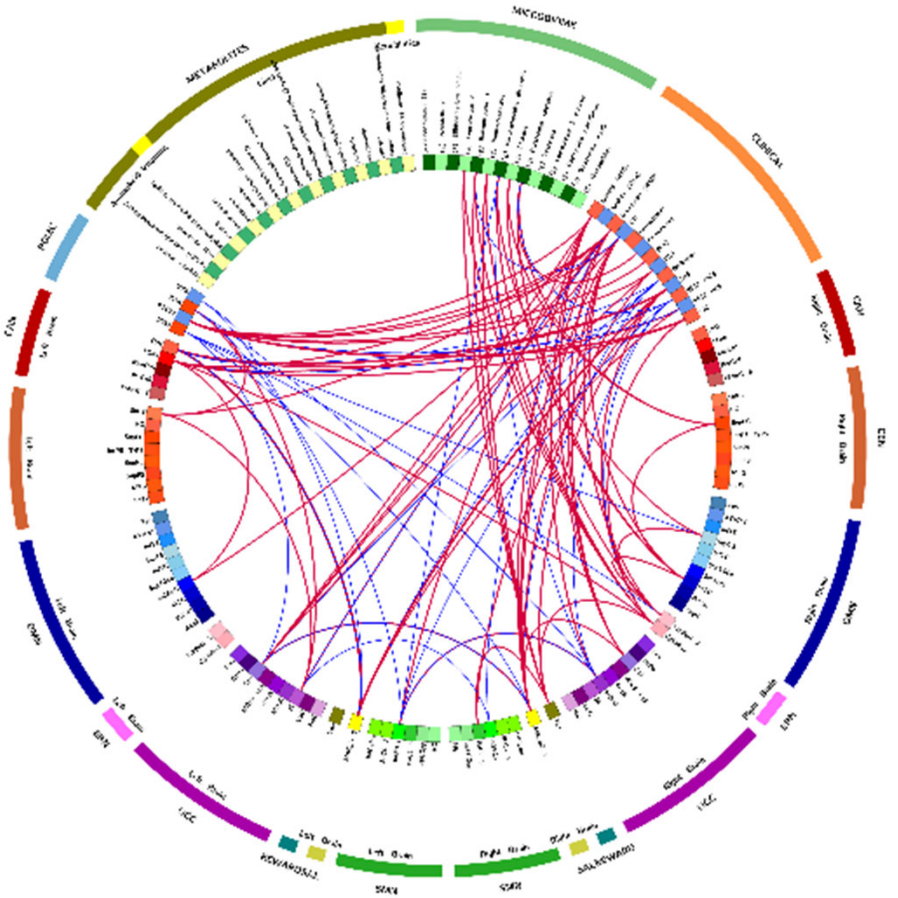
↓ Prevotella copri
↓ Bacteriodes salyersiae
↓ Blautia stercosis
↓ Faecalibacterium prausnitzii
↓ Ruminococcaceae


CEN
Right Brain
CAN
Right Brain
CLINICAL
SbPS
RG
SupFG
IntPS
TrPS
SupPL
SupFS
MFG
InfFs
OrG
LORs
MedOrS
PerCaS
FMarG
S
VSI
SFI2
PCS
MCS
SES
Resilience
PSS
PHQ
Neuroticism
Extraversion
ETI
Depression (HAD)
Anxiety (Trait)
Anxiety (HAD)
(g) Haemophilus
(g) Bacteroides nordii
(g) Bacteroides massiliensis
(g) Coprococcus 2 eutactus
(g) Tyzzerella
(g) Bacteroides salyersiae
(g) Alistipes
(g) Parabacteroides di
(g) Ruminococcaceae
(g) Ruminococcus 1
(g) Coprococcus 2
(g) Bifidobacterium
(g) Prevotella 9
(f) Ruminococcaceae
linate (4-oxovalerate)
lopregnanolone sulfate
valerate

Black

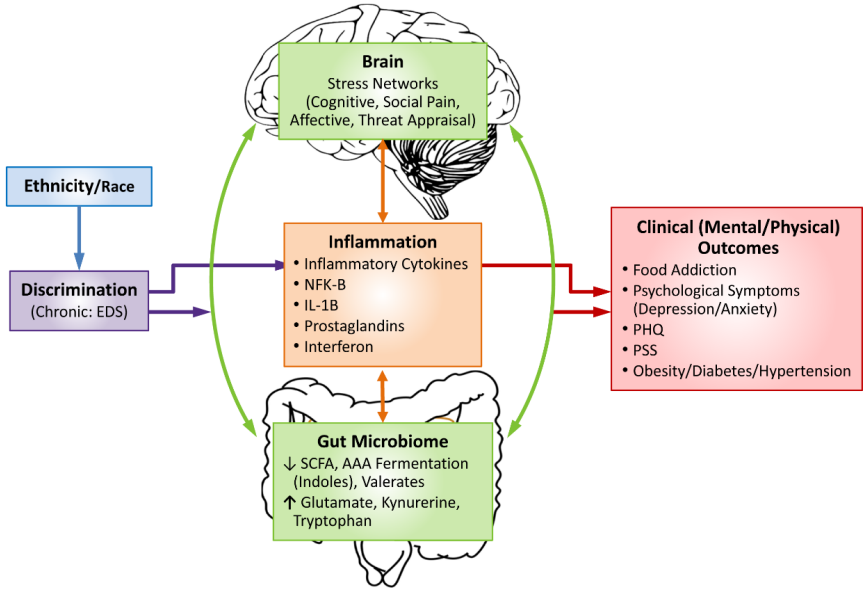


White



Takeaways

- Experiences of discrimination appear to have a more pronounced inflammatory response among African American than White persons
- Evidence from surveys & fMRI results suggest that African American persons show enhanced coping with discrimination
- Brain-gut interactions. Perhaps some truth to the saying “racism makes me stick to my stomach”



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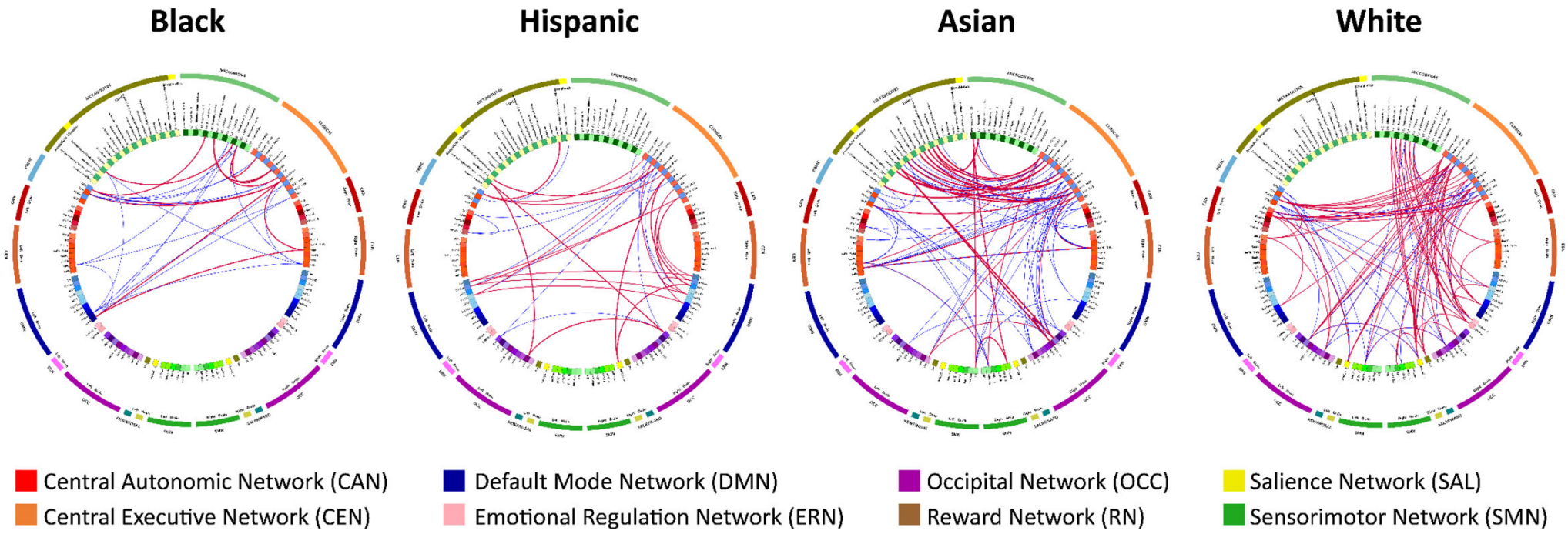
- Yinming Guo
- Jennifer S. Labus
- Bruce Naliboff
- Steve Cole
- Xiaobei Zhang
- Emeran A. Mayer

NIH/National Institute of Minority Health and Health Disparities. (R01MD015904)

Closing thoughts

- We need to focus on racism at multiple levels
- We need to also focus on resilience and resistance

Thank you!


Black
Hispanic
Asian
White
Central Autonomic Network (CAN)
Central Executive Network (CEN)
Default Mode Network (DMN)
Emotional Regulation Network (ERN)
Occipital Network (OCC)
Reward Network (RN)
Salience Network (SAL)
Sensorimotor Network (SMN)

Brain Regions Associated with Discrimination by Race

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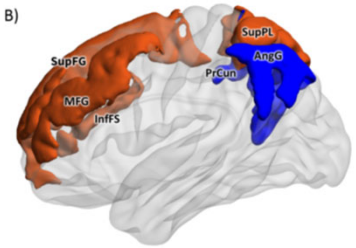
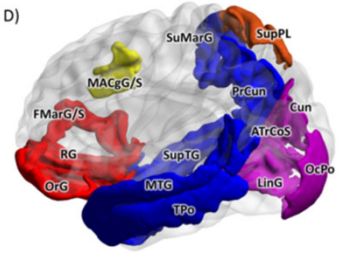
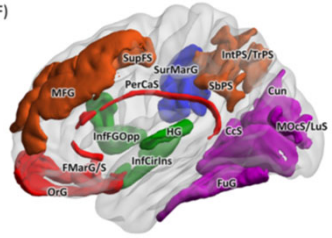


DMN and CEN

HISPANIC

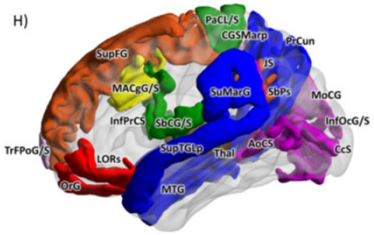


ASIANS



DMN, CEN, SMN, OCC, CAN

WHITES



DMN, CEN, ERN, RN, SMN, SAL, CAN, and OCC

- Central Autonomic Network (CAN)
- Central Executive Network (CEN)
- Default Mode Network (DMN)
- Emotional Regulation Network (ERN)
- Occipital Network (OCC)
- Reward Network (RN)
- Salience Network (SAL)
- Sensorimotor Network (SMN)