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Viewpoint

A discussion on the notion of race in cognitive neuroscience research

Anelis Kaiser Trujillo ^{a,*},¹, E. Ngubia Kessé ^a, Oliver Rollins ^b,
Sergio Della Sala ^c and Roberto Cubelli ^{d,**},¹

^a Gender Studies in STEM, Institute of Computer Science, University of Freiburg, Germany

^b Department of American Ethnic Studies, University of Washington, Seattle, USA

^c Human Cognitive Neuroscience, Psychology, University of Edinburgh, UK

^d Department of Psychology and Cognitive Sciences, University of Trento, Italy

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A recent editorial in *Cortex* (Cubelli & Della Sala, 2018) proposed to ban of the term race in neuroscience research citing that the concept of race has no scientific basis and justifies discrimination. Kaiser Trujillo, Kessé and Rollins submitted a commentary to that editorial, agreeing that race does not have biological foundations but maintaining that the social construction of race is critical to research.

Their commentary is reported below followed by an editorial rebuttal. Given that the topic under discussion concerns editorial policy for manuscripts submitted to *Cortex*, an unusual format has been used aimed at yoking the two papers, which are published together under one overarching title with a unique DOI.

* Corresponding author. University of Freiburg, Georges-Köhler-Allee 079, 79110 Freiburg, Germany.

** Corresponding author. Dipartimento di Psicologia e Scienze Cognitive, Corso Bettini, 31, 38068 Rovereto (Trento), Italy.

E-mail addresses: anelis.kaiser@tf.uni-freiburg.de (A.K. Trujillo), roberto.cubelli@unitn.it (R. Cubelli).

¹ Joint first authors.

The significance of race in neuropsychology and cognitive neuroscience

Anelis Kaiser Trujillo^a, Emily N. Kessé^a and Oliver Rollins^b

^a Gender Studies in STEM, Institute of Computer Science, University of Freiburg, Germany

^b Department of American Ethnic Studies, University of Washington, Seattle, USA

1. Introduction

Neuroscientists [Cubelli and Della Sala \(2018\)](#) call for a ban on the term “race” to help minimizing the impacts of racism on the brain sciences. They rightly note that the term race often provokes false biological connotations of difference that reify ideologies of racial superiority and inferiority. Moreover, the neuroscientists contend that a ban on the term race is a necessary first step for researchers to expose and disrupt scientific racism—the intentional or inadvertent dependency upon scientific data, proof, and above all authority to establish, reconstitute, and justify (biological, cultural, and political) forms of racial discrimination and structures of racial inequality ([Barkan, 1992](#); [Duster, 2003b](#); [Hammonds & Herzig, 2009](#); [Marks, 2017](#); [Roberts, 2011](#)). We agree with much of Cubelli and Della Sala’s solicitation. Scholars have consistently demonstrated the historical flaws and contemporary pitfalls of (mis)using race in the biological sciences ([Barkan, 1992](#); [Duster, 2003a](#); [Gilman & Thomas, 2016](#); [Gould, 2006](#); [Graves, 2003](#); [Hammonds & Herzig, 2009](#); [Koenig et al., 2008](#); [Marks, 2017](#); [Reardon, 2017](#); [Roberts, 2011](#); [Schiebinger, 2004](#); [TallBear, 2013](#); [Wailoo et al., 2012](#)). This concern over the use of race in scientific research demonstrates the tension that arises when attempting to evaluate group differences while seeking to avoid endowing social identity with an erroneous meaning of biological essentialism ([Duster, 2006](#)).

Critical research on genomic and race shows that researchers often fail to fully describe and define what they mean by race in the first place ([Braun et al., 2007](#)). Likewise, [Panofsky and Bliss’s \(2017\)](#) work on “classification ambiguity” finds that at least eight different systems of racial classification were employed across articles published in *Nature Genetics*, which make it nearly impossible to compare results by race across such studies. Defining what is meant by race, therefore, is a prerequisite for better science, and essential if we are serious about addressing scientific racism. In this article, we defined race as a social, or sociopolitical, construct that has been historically woven into and made culturally visible through common-sense assumptions about supposed obvious phenotypes of difference ([Hall, 2021](#); [Roberts, 2011](#)).

While the meanings of race vary temporally and spatially, it operates as a system of power, a social practice, that “signifies and symbolizes sociopolitical conflicts, interests, [and values] in reference to different types of bodies” ([Winant, 2000](#), p. 172). This description underscores the social nature of race and

helps us see that the making of race (racialization) goes beyond individual identity and that the consequences of race (racism) exceed personal dislike or hate. That is, racialization helps (re)define and (re)configure how seemingly inconvertible “facts” about social difference should matter in society, and the structural practices of racism ([Hamilton & Ture, 2011](#)) help entrench and rationalize such “common-sense” knowledge about social worth through everyday life experiences: via social institutions ([Bonilla-Silva, 1997](#); [Ray, 2019](#)), political actions ([Omi & Winant, 2014](#)), cultural representations ([Hall, 2021](#)), and even scientific and technological developments ([Duster, 2003a](#); [Roberts, 2011](#)).

[Cubelli and Della Sala \(2018\)](#) do not dispute the social nature of race. They do, however, recommend that neuroscientists apply “better defined biological categories and socio-cultural constructs” in research instead of utilizing the term race (p. A1). Social scientists have repeatedly warned that race should not be reduced to other, seemingly more “real” socio-cultural categories (e.g., ethnicity, class, nationality, or culture) or biosocial concepts (e.g., ancestry) because it is a legitimate social category and has its own unique analytical merit for understanding the consequences of stratification, power, and inequality in society ([Collins, 2008](#); [Duster, 2003b](#); [Hall, 2000](#); [Nelson, 2016](#); [Omi & Winant, 2012](#); [Wade, 2010](#)). Furthermore, we must be sure that any effort to address scientific racism accounts for the way consequential social practices of difference can be readily remade through existing empirically accepted and ethically approved research methods without need of intent ([Epstein, 2009](#); [Fujimura & Rajagopalan, 2011](#); [James & Iacopetti, 2021](#)).

Lessons from genomics research demonstrate that essentialist readings of race reappear at various stages of the research process even when researchers avoid direct mentions of race and opt for the seemingly race-neutral category “genetic ancestry” to evaluate group differences ([Fujimura & Rajagopalan, 2011](#); [Fullwiley, 2008](#); [Shim et al., 2014](#)). Sociologists [Fujimura and Rajagopalan \(2011\)](#) find that the complex and flexible nature of new classificatory alternatives of race in genomic research make it doubtful that researchers can resist valuing them as rigid measures of biological worth in later stages of the research process or that the public can avoid interpreting the data as proof of innate racial difference when such knowledge are translated out into other biomedical or social venues. Furthermore, examples from cultural neuroscience, sociology, and anthropology show that substituting race for ethnicity (or other culture factors) diverts attention

away from the particular historical effects and contemporary dynamics of racial oppression, which continue to linger through the guise of cultural racism (Hall, 2017; Martínez Mateo et al., 2012; Omi & Winant, 2014; Wade, 2010).

In this paper, we contend that preventing scientific racism requires a critical reflection beyond simply changing or omitting terminology. Neuroscientists must consider how existing methodological practices and epistemological foundations of their research fail to account for the dynamic and often latent nature of racialized difference (Kuria, 2014; Rollins, 2021b; Roy, 2004; Shen, 2020). Kuria (2014) advocates “integrating ‘race’ as a necessary analytical category in critical neuroscience work” (p. 110). Similarly, Rollins (2021b) suggests that an antiracist neuroscience will require us to “go beyond unpacking the ideological foundations of prejudice and stereotypes to expose interconnected social institutions and practices that systematically discriminate against certain bodies, mitigate life chances, and tacitly reproduce racial inequity” (p. 540). These invitations highlight the need for neuroscientists to (re)consider the underlying racial politics and discourses that shape the scientific inquiries they seek to address—to reflect on the relational ways that our knowledge production processes can bolster existing racial hierarchies and illuminate the systemic practices of the social nature of race which are often inconspicuously absorbed within the routine production of science. Replacing race for more seemingly more biologically real proxies for race, and/or overlooking the discipline’s larger undertheorized approach to the social construction of race risks producing a “colorblind” science (Ford & Airhihenbuwa, 2010; Hunt et al., 2000; Roberts, 2012; Rollins, 2021a; Williams et al., 2020). Colorblind racism implies that the focus on or application of race itself sustains racism and encourages less societal attention to race or racism (Bonilla-Silva, 2006). Although, this is not the aim of neuroscientists seeking to purge racism from the brain sciences, misreading the dynamic social nature of race can still divert attention away from the way (racial) inequality gets reconstituted through normative scientific practices, and help usher in color-blind scientific racism (Rollins, 2021a).

To be clear, we are not calling for a new “racial science” nor do we wish to further the application of race or race proxies as biological characteristics or seemingly straightforward phenotypic descriptors in neuroscientific research to measure “racial categories of difference.” Instead, our position is that a renewed commitment to understanding race as a social construct is necessary to enhance both theoretical and methodological practices in future neuropsychological and cognitive neuroscientific research. Neuroscientists cannot fully investigate the underlying neurobiological mechanisms biomedical risk, cognition, or psychological function without acknowledging when and how systemic social consequences of race impact a) our initial conceptualization of specific phenomenon and research design, b) which factors we deem valid (or invalid) measures or causes for the phenomenon of interest, and importantly, c) the types of neuropsychological interventions (biomedical remedies or social policies) that our data supports or suggests for consumption in society.

This paper begins with a brief overview of the “neuroscience of race” (Kubota et al., 2012), one of the few neuroscientific sub-fields that explicitly focuses on race, specifically the neurocognitive processing of race and underlying mechanisms of racist beliefs. Next, we expand our examination beyond the subfield to assess the relevance of race in neurobiological research more generally using three points of analysis that considers the use of race as: a variable of measurement, an explicit classification of identity, and an implicit category of inequality. Our consideration of these three points centers on three parallel critiques: how the focus on race as a variable of measurement has produced an inadequate *Black and White logic* of racial difference, how the reduction of race to a mere individual variable of measurement helps silence structural forms of racism, and how the tacit inattention to the reciprocal dependency between race and racism results in the failure to recognize the *effects of race*, i.e., the lived and embodied experiences of racialized inequality. We posit that all three of these critiques point to a pervasive lack of engagement with the social construction of race. We conclude the article with suggestions about how to properly engage with race as a social construct as an intervention to help minimize scientific color-blind racism. Moreover, we encourage neuropsychologists and cognitive neuroscientists that take up our call to critically reflect on the impacts of *doing* race in their talks and writings as a productive praxis that exposes the difficult, violent, and often unacknowledged racialized consequences of science, which is a first and necessary step toward a truly anti-racist (neuro)science.

2. Neuroscience of race, implicit racial bias (IRB) and race stereotype

The “neuroscience of race” examines the neuro-cognitive processes and neuroanatomical regions involved in the perception of socially defined categories of racial difference and evaluation of underlying racial beliefs and values (Kubota et al., 2012). The subfield is best exemplified by two interrelated research tracts: a) neurocognitive evaluations of race and b) neural mechanisms of implicit racial bias (IRB) (Brown et al., 2017; Losin et al., 2012; Phelps et al., 2000; Senholzi et al., 2015; Wiese & Schweinberger, 2018). For example, neurocognitive studies focusing on evaluations of race may elucidate how the sense of belonging to a racialized group can influence one’s neural responses when being empathetic (Xu et al., 2009; Zuo & Han, 2013). Others, like neuroscientists Ito and Bartholow (2009), provide a more comprehensive overview of race evaluation in the brain. Their “neural correlates of race model” describes four systems for race characterization: perceptual, cognitive, evaluative, and behavioral control. Each of these systems correlate with neural structures in the processing of (often phenotypic) signifiers of race (like human faces) and the regulation of race-related responding. Specifically, the face coding (perceptual) system is associated with the fusiform gyrus; the cognitive system is tied to the medial prefrontal, temporal regions, and posterior cingulate regions; processes of evaluation linked with the amygdala, orbitofrontal cortex, and insula; and behavioral

control corresponded with the function of the dorso- and ventro-lateral prefrontal cortices, as well as the anterior cingulate cortex.

Using fMRI and other experimental neuroimaging methods, neuroscientists have advanced this science beyond “just” detecting the perception of race towards providing evaluative measures of bias in brain and mind. Phelps et al.’s 2000 study was one of the earliest neuroscientific evaluations of bias. Phelps’s lab notes that amygdala activation is not correlated with conscious attitudes about race when participants are presented male faces of racial ingroup (White) and outgroup (Black) members. However, the researchers did find that processing unfamiliar (Black) faces elicited amygdala activation that correlated with indirect (implicit) negative evaluations of Black individuals. Similar to Ito and Bartholow’s model described above, Amodio (2014) builds upon the work of Phelps et al. and others to map three neural networks related to unconscious bias behaviors in a neuroscientific model of “prejudice and stereotyping.” The first, the network for prejudice, depicts amygdala activation and its role in the implicit mentalization of social categorical, emotional, cues about racial groupings. The second network, the network for stereotyping, illustrates how the frontal and prefrontal cortex modulate previously learned and stored information of bias-related content. Finally, the last network, the regulation of prejudice and stereotyping, details the function of the median frontal cortex, including anterior cingulate cortex, to control and self-regulate cognitive and neural responses.

Neuroscientists studying race stereotyping and IRB have been sensitive to the threat of scientific racism. Although they argue that stereotypes of cultural categories are embedded deeply in the very early stages of neurocognitive processing (Lieberman et al., 2005), they make clear that racial prejudice “emerge[s] over development,” and therefore correlates of activation do not demonstrate that prejudice is biologically “pre-programmed” in our brains (Telzer et al., 2012, p. 243). The intention of this (important) research, according to our colleagues, is to help illuminate new information about the unconscious materialization of racial bias, prejudice, and stereotyping as a way to help reduce or eliminate these attitudes and behaviors in society (Amodio, 2014; Eberhardt, 2005; Kubota et al., 2012). Nevertheless, neuroimaging investigations of race, as well as other neurobiological quantifications of racial identity beyond this subfield, necessitate conversations about the appropriate operationalization of race in neuroscience research (see 3.1), the registration of race as social category that exceeds visible markers of identification (see 3.2), and the appreciation of race as a relational social construct that is always already experienced, perceived, and valued through a lens of inequality (see 3.3).

3. The use of race in neuroscience research

3.1. Race as a variable of measurement

The “neuroscience of race” examines racial identity through a measure of perception often based on phenotypic facial

stimuli (Amodio, 2014; Cunningham et al., 2004; Freeman et al., 2010; Hart et al., 2000; Kubota et al., 2012; Lieberman et al., 2005; Phelps et al., 2000; Stoller & Freeman, 2017). The most consistent findings use “Black” and “White” faces as stimuli, and research participants are often limited to Black and White racial groups (Kubota et al., 2012). Seemingly apparent and stark differences between Black and White faces help reassure researchers that the differences recorded through fMRI “correctly” represent separate forms of racial categorization. Phenotype surely influences how we come to understand and do racial relations, but an overemphasis on Black and White facial stimuli limits racial meaning to a Black/White paradigm of race—a narrow reading of racial categories as primarily the relational practices and consequences of US-based Black and White social groupings. Employing this limited conceptualization of race to create homogenous research groups increases the possibility that biologically deterministic meanings of difference will be read implicitly into the scientific process.

Neurocognitive research that replicates the Black/White paradigm undertheorizes racial categories of difference. As cultural theorist Stuart Hall (2021) informs us, there is a “cultural function of scientific knowledge” (p. 367) itself, which can fix and secure meanings about difference that otherwise cannot be fixed or secured. When used only as a demographic variable, determined through self-declared or externally assigned classifications (e.g., Caucasians/White, Asians, or African American/Black), race acts as a fixed category of difference. Such readings of race neglect the dynamic import of social process, and risk rationalizing ostensibly static phenotypic understandings of difference as socially incontrovertible and empirically generative facts about social life (Zuberi & Bonilla-Silva, 2008). In other words, we cannot assume that US-Black and White faces will evoke universally consistent sociocultural understandings of race, let alone neurobiological processes of categorical cuts, when observed across racial or ethnic groupings. Some like Kubota et al. (2012), recognize this vulnerability, noting that “[t]he links between the implicit expression of race attitudes and amygdala activation to [B]lack and [W]hite faces implies that the manner in which race stimuli are interpreted may be more important than other, perceptual distinguishing characteristics” (p. 942). In fact, greater amygdala activity has been detected in participants viewing photos of “dark-skinned” versus “light-skinned” White individuals, which suggests a more complex relationship between bias and phenotypical markers of perception regardless of racial identity (Ronquillo et al., 2007).

The dependency upon Black and White stimuli in neuroscience research also raises serious questions about the operationalization of difference for other racialized and ethnicized groupings. Xue et al.’s (2018) use an equal number of “White/Caucasian, Latino/Hispanic, and Black/African-Americans” in their study sample and create three different versions of the experimental condition, an erotic task, for their research on the role of the dorsal anterior insula in sexual risk. While it is encouraging to see the authors attempt to expand beyond a Black/White paradigm, the presentation of the study’s findings implicitly suggests “Whiteness” as a

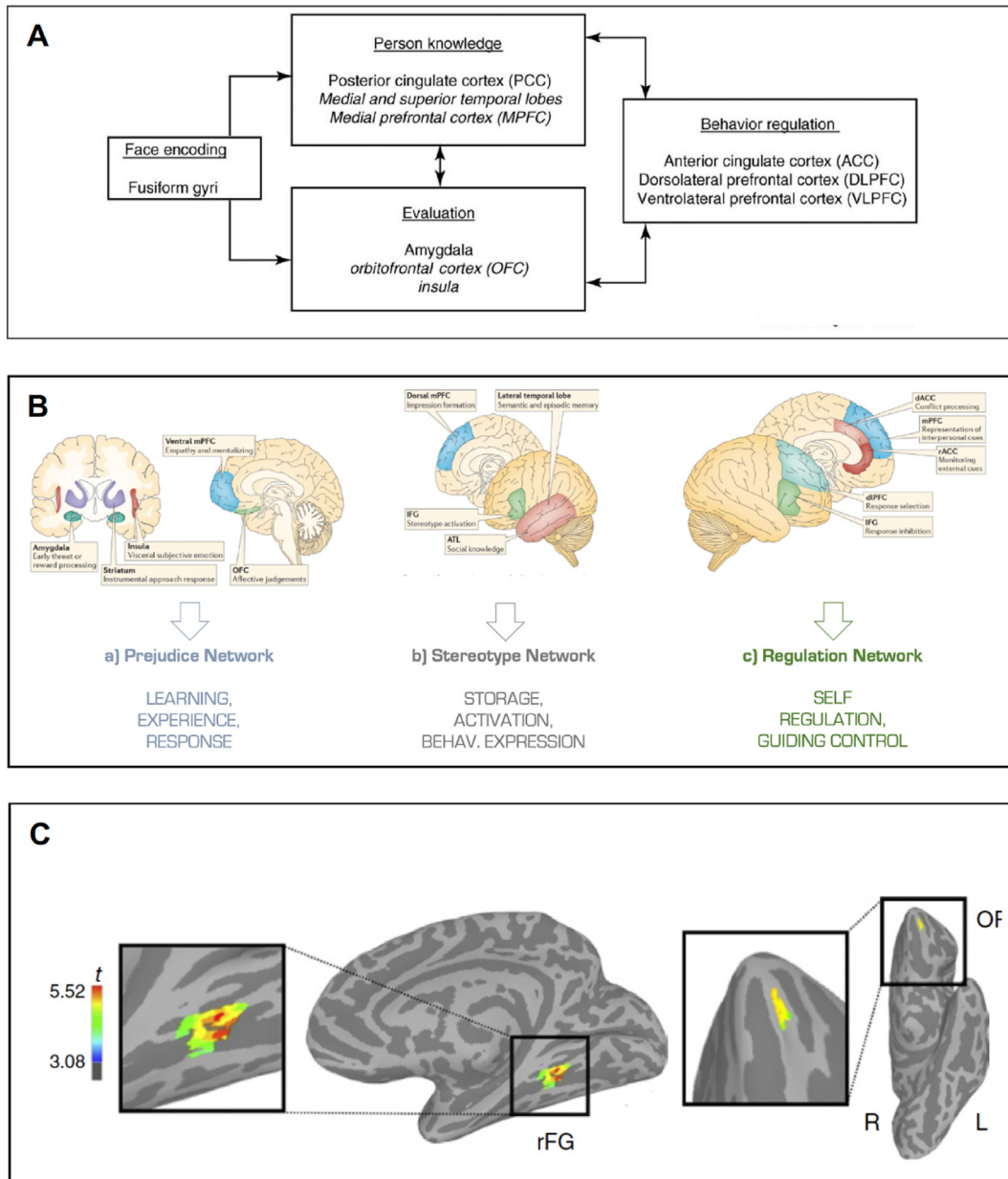


Fig. 1 – Race bias and race stereotypes research at three different time points in the history of “brain imaging of race”, 2009 (A), 2014 (B), 2016 (C). [Ito and Bartholow \(2009\)](#) describe race as based on classical neurocognitive systems: perception, evaluation, knowledge and behavior. [Amodio \(2014\)](#) shows the neurobiology of prejudice and stereotyping using three different neural networks, comprising, at least partially, the three systems by Ito and Bartholow. [Stolier and Freeman \(2016\)](#) indicate the significance of both right fusiform gyrus and orbitofrontal regions in the intersected processing of race in the brain through predictive searchlight analysis. These three approaches reflect the trajectory of human cognitive neuroscience, from segregated systems based on cognitive science, through more fluid and dynamic view based on circuits to the social science-influenced view of regarding race not as a clear-cut but as an inherently intertwined social category. PCC: Posterior Cinguli Cortex, MPFC/mPFC: Medial Prefrontal Cortex, OFC: Orbitofrontal Cortex, ACC: Anterior Cinguli Cortex, DLPFC/dlPFC: Dorsolateral Prefrontal Cortex, VLPFC: Ventrolateral Prefrontal Cortex, IFG: Inferior Frontal Gyrus, ATL: Anterior Temporal Lobe, dACC: dorsal Anterior Cinguli Cortex, rACC: rostral Anterior Cinguli Cortex, fFG: right Frontal Gyrus, OF: Orbitofrontal, R: right, L: left.

representative standard model of empiricism. Xue et al. only visualize the White/Caucasian version of the erotic tasks and omit any mention of the impacts of race/ethnicity outside of the demographic description.

The inclusion of “Latino/Hispanic” groupings in neuroscience research also requires attention. The relationships between race and ethnicity are complex, but the two concepts are not necessarily synonymous in the analytical sense. Ethnic groupings signify cultural attributes that are articulated through notions of shared kinships, traditions, and geographical locations (Hall, 2017; Wade, 2010). Confounding these relations even more, ethnicity, as seen in the US context, is (re)fashioned through existing racial, and not only cultural, ideologies of difference, worth, and power (Torkelson & Hartmann, 2020). Here, relying on phenotypic characteristics as conformation of social identity is more precarious. In the US, where the Xue et al.’s study was conducted for example, Latinx/Hispanic is considered an ethnicity, which can include, for example, Black Latinx or White Latinx. Therefore, applying a Black/White paradigm here (and especially the use of phenotype as a proxy for race), or neglecting to explain the significance of study population’s racial/ethnic diversity in neuroscience, flattens the intricate relationship between the making and organization of race and ethnic categories. This confounds a race effect with an effect of unfamiliarity (Malinowska, 2016), magnifies and authorizes US racial meaning over non-US racial and ethnic groupings, and risks producing racist generalizations of White versus Black homogeneity (Kuria, 2014).

3.2. Race as a category of identity

Most neuroscientists researching IRB contend that the research could potentially reshape, if not debunk, problematic assumptions about race in society, and help elucidate the interplay between social and biological processes more generally (Amodio, 2014; Eberhardt, 2005; Kubota et al., 2012). Recent research illuminating where and how neurobiological changes occur when attitudes towards racial beliefs shift provides support that neural alterability and self-regulation may help cultivate potential interventions for bias behaviors (Senholzi & Kubota, 2016). Prejudice–reduction interventions targeting amygdala response, such as “counter-stereotyping” or familiarizing, have also shown promise (Finnegan et al., 2015; Lai et al., 2014; Mattan et al., 2018; Olson & Fazio, 2006), although the long-term results of such interventions have been limited (FitzGerald et al., 2015; Hinton, 2017).

Developing more effective interventions for racial bias is vital today, and we recognize our colleagues’ efforts towards this intervention. However, it is unclear what neuroscientific understandings of bias signify, and even less is sure regarding if and how such conceptualizations of bias illustrate the enduring effects of racism in society. Without attention to the actual practices of racism, we are unsure about the effectiveness of such strategies. Similarly, neuroscientists Chekroud et al. (2014) question if amygdala sensitivity represents a clear neuro-signature for implicit racial bias. Indeed, it is a fallacy to assume that amygdala is “responsible for racial attitudes” because the amygdala responds to all manner of novel or unfamiliar stimuli (Cloutier et al., 2014; Malinowska,

2016) and is modulated by other factors that are not necessarily related to one particular socio-affective process (Cunningham et al., 2008).

As for the Chekroud study, the authors argue that what the amygdala activity in these studies measures is a “threat” response and not bias, because Black men (specifically in the US context) are often stereotyped as intrinsically violent or dangerous. That is, “negative culturally-learned associations between [B]lack males and potential threat may better explain the data than does a general ingroup–outgroup [bias] explanation,” in which ingroup-membership is regarded as category of racial identity (Chekroud et al., 2014, p. 4). These findings imply that it is vital to understand how the multidirectional and *intersectional*¹ aspects of racism inform the basis and manifestation of implicit biases. In a recent model emphasizing the “intersected” character of processing social categories during the process of stereotypes in the brain, Stolier and Freeman (2016, 2017) describe how notions of race interfere with other categories of social cognition in face processing, such as sex/gender or emotions. This model displays how social categories that share commonalities e.g., race and sex/gender stereotypes, effect the subjective perception of faces, which themselves can be predicted in neural patterns of the right fusiform gyrus and in the orbitofrontal cortex (see Fig. 1). As Kuria (2014) makes evident, “it is absolutely necessary to include the influence of ‘race’-gender power relations in shaping cognitive bias as it is the race(ism) that produces specific social experience” (p. 114). Failure to fully theorize the consequences of racism, and other social inequalities, in the laboratory can be understood as a practice of silencing (Kessé, 2018; Kuria, 2014).

Silencing refers here to the way in which critical engagements with racism and racializing processes remain unnamed, are replaced by, or misunderstood in research as simple extensions of other socio-cultural concepts or constructs, which shifts empirical focus away from the debilitating structural practices of inequality that exacerbate and rearticulate the enduring unequal psychological, structural, historical, and material consequences of race. Capturing the neurobiological categorization of racial/ethnic identities is not enough to counteract the effects of silencing. Moreover, a distinctive focus on prejudice/bias risks minimizing the historical foundations and powerful social relations that underpin racism to mere ideological attitudes and individual preferences (Kessé, 2018; Kuria, 2014). “Utilizing ‘prejudice’ as a variable in neuroscience research silences the actual violence that race(ism) produces and de-historizes the context within which the aforementioned social groups are created” (Kuria, 2014, p. 112).

Taking seriously the broader psychological and sociopolitical mechanisms of inequality that impinge upon and racially stratify (un)equal life chances forces us to keep in mind the rarely acknowledged social uses and policy practices that are tied to production and practices of science. Legal scholar Jonathan Kahn’s (2017) analysis of the IRB practices in the law makes clear that the admittedly positive goals of the neuroscience of race can inadvertently obscure political and legal responsibility for racial justice. While the neuroscience of race

¹ For recent reviews on the theory of intersectionality see: Cho, Crenshaw, and McCall (2013) and Collins (2015).

may provide integral knowledge about the function and regulation of prejudice at the neurobiological level, we emphasize that the risk of isolating race to individual level understandings of implicit bias, or merely a demographic marker of identity, is silencing—unintentionally overshadowing, overlooking, or even excusing, systemic discourses and practices that engender and reconstitute racialized social hierarchies.

3.3. Race as a structure of inequality

Rollins's (2021a) examination on the neuroscience of violence reveals a different consequence of silencing through neuroscientific attempts to avoid race. Race is rarely used in neuroscientific publications on violence, and conversations about racism are even more uncommon. This may seem like a race-neutral approach, yet the stain left by the racist history of biocriminology assiduously influences neuroscientists' well-intended ideological conceptualization, empirical production, and anticipated ethical application of this science (Rollins, 2021a). The trouble here is not due to explicitly "racist neuroscientists," but the "absent presence" of race (M'charek et al., 2014, p. 459), which the neuroscientists in Rollins's study try, unsuccessfully, to divorce from the science. Efforts to avoid race, through universally accepted and seemingly neutral experimental practices, provide a fertile empirical space for racial inequality to be effortlessly built back into research on violence.

Using the Diagnostic and Statistical Manual (DSM), neuroscientific research on violence starts by determining the presence or risk for personality disorders related to violence (e.g., antisocial personality disorder). To accomplish this task, neuroscientists often rely upon seemingly neutral behavioral data or records—for example, arrest reports—to help recognize and trace patterns of unhealthy or violent behaviors. In doing so, however, they negligently diminish any chance to recognize and address the racist histories and consequences entrenched within these data (Rollins, 2021a). Kiehl et al.'s (2018) research on the "neuroprediction of recidivism" actually cautions that their use of "official arrest reports to derive [their] primary outcome variable (re-arrest) ... may be biased by police strategies, geography, profiling, etc." (p. 822). Such an acknowledgment, however, does little to disrupt the chance that their findings can (and likely will) be used to normatively perpetuate existing sociopolitical investments in race in the US criminal justice system.

It is not by accident that encounters between Black men and police are more likely negatively confrontations, or that race impacts how we determine permissible law enforcement tactics, "dangerous" neighborhoods, and whose body we consider risky and in need of surveillance (Ferguson, 2019; Gaston & Brunson, 2020; Muhammad, 2010; Rios et al., 2017; Rollins, 2018). Neuroscientists interviewed by Rollins acknowledge the need to better grasp the relationship between racism and the risk for antisocial behavior. The neuroscience of violence, nevertheless, exemplifies a research program that is ill-equipped to handle the effects of race—the dynamic and embedded ways that the repressive realities of systemic racism

and prejudice render racially marginalized groups as social threats (Rollins, 2021a). Thus, avoiding race—a strategic omission of the consequential lived experiences because of racism—does nothing to help unravel the sociopolitical binds reinforcing supposed natural links between race, biology, and criminal suspicion. As a result, this science attempts at a color-blind (Bonilla-Silva, 2006) science, one that tries to tactfully avoid mentions of race, will likely to preserve these seemingly static hierarchies of racism without any need for intent.

4. Conclusion

As we have shown, it is impossible to completely rid neuroscientific research of race because racial meaning is not simply what is visible, for instance in pictures of face stimuli, or deemed biologically calculable, and scientific racism cannot be fully accounted for in terms of intentionality. We, therefore, agree with sociologist Troy Duster's (2003b) reflection that, "purging science of race ... may not be practical, possible, or even desirable" for some research questions (p. 258). We take this to mean that attending to the socially constructed nature of race has important implications for addressing the ongoing production of racism in society and science. Moreover, without this careful scrutiny of obscure and normative work of race, we risk producing "(scientific) racism without racists (scientists)" (Bonilla-Silva, 2006). Addressing the potential for scientific color-blind racism requires researchers to better understand how the social nature of race intersects with scientific research, is embedded normatively in practices of inequality, and reproduced preemptively through ideals of social governance that are routinely relied upon and enforced. The question that should concern us is: how can neuroscientific researchers empirically approach and reflect on the underlying yet substantial consequences of race?

As a first step, researchers will need to actively engage with, and not just readily cite, research on social difference, including: race and neuroscience (Black In Neuro, n.d.; Kuria, 2014; Pitts-Taylor, 2019; Rollins, 2021a; Roy, 2018), neuroethics (Fine, 2012; Shen, 2020), critical neuroscience (Choudhury & Slaby, 2012), neurofeminism (Kaiser, 2012; Rippon et al., 2014; Sanchis-Segura et al., 2020; Schmitz & Höppner, 2014), and the extant contemporary literature on race and science (Abu El-Haj, 2007; Benjamin, 2019; Bliss, 2018; Duster, 2015; Fujimura et al., 2008; Hammonds & Herzig, 2009; M'charek et al., 2014; Meloni, 2017; Nelson, 2016; Rajagopalan et al., 2017; Roberts, 2011; Roberts & Rollins, 2020; Shim, 2014; Wailoo et al., 2012). Only through genuine and iterative engagements with existing social theories and empirical research on race/racism throughout the research process—i.e., during the formulation of the research questions, the implementation of the experimental design, the interpretation of the results including their scientific communication—can we readily identify hidden implications of race in neuroscience and adequately combat colorblind scientific racism.

Second, we, as neuroscientists and related researchers, must strive for innovative scientific methods that will ensure

an appropriate understanding of and productive engagement with the effects of race on and in neuroscientific investigations of social life. We must resist the temptation to make reverse inferences, even when interpretations seemingly explain, or align with preexisting, and seemingly natural, perceptions of racial outcomes in society. For example, it is unscientific to pinpoint the amygdala as the sole monitor of implicit racial attitudes because correlating activation of one specific brain area with a cognitive process does not mean its reverse is true. Moreover, examining racial attitudes in this either/or (implicit or explicit) dichotomy disparages the fact that human evaluation and behavior about a group can concurrently include both unintentional and purposeful racial thoughts and behaviors, and that many perceptions of (negative) racial worth are the result of systemic sociopolitical schemas that appear perfectly acceptable, cordial, and even democratic.

Third, this invitation to rethink the social construction of race in neuroscience should not be confused with a request to decouple race from its political and cultural consequences in the social world or reinvent it as a proxy biologized category, both of which provoke the (re)essentialization of racial identity. Instead of static statistical group comparisons of racial identity, we insist that the field must prioritize explicating *how* and *when* race matters within the practices of science, the people and objects of study, and especially the inseparable link between the two (Zuberi, 2001). Understanding race as social, or socio-political, construct means acknowledging its inextricably entangled existence with racism, and thus how this process discriminately mitigates life chances and well-being. This will require (neuro)science to push beyond a Black/White paradigm of race. This move will not only provide a better understanding of the sociopolitical salience of race, but it will help researchers take seriously the stingy consequences of racialization for all of society. We must, therefore, be able to effectively argue when race matters or not for neuroscientific data and interventions. In addition, (neuro) scientists must avoid silencing the consequences of racism in the lab. Here, we point to the need for an intersectional orientation that goes beyond the creation and analysis of research groupings (Duchesne & Kaiser Trujillo, 2021). We must wrestle with the way our own positionalities—racial, sex/gendered, classed, sexual, and/or ability-based identities—shape the making of science and especially the often-unspoken politics of our work.

Finally, we call on our colleagues studying the neurobiological underpinnings of social phenomenon to recognize the dynamic effects of racial stratification and racism that occur outside the lab. In order to determine how and when neuroscientific research needs to address the significance of race, neuroscientists, especially those focused on social problems, must clearly explicate in their work how the effects of race impact the life chances of the participants in a study. That is, to account for the implicit and explicit ways that our understanding of participants' cognition and behavior are filtered through their everyday lived-experience's with race, mitigated by structural forms of racism, and are often adaptable, responsive, and above all relational to practices of racial

identity. Therefore, it is necessary to discern how formal ideas, standards, and procedures of research, and unarticulated understandings of difference and the body outside of science, come together to generate meaningful representations of (racial) difference or inclusion through the biological and biomedical sciences (Epstein, 2009). Such a reflection is needed to state unequivocally how potential neurobiological interventions for health issues, cognitive conditions, and social problems can and cannot address issues of racial inequality that are sometimes cryptically entangled with, if not underpinning, our focus of study.

The problem of (neuro)scientific racism concerns more than just the question of whether “we should take race out of neuroscience.” As scientists, our ethical responsibility, is to conduct and implement research in a non-discriminatory manner that is just for everyone. Today's current racial climate aggravated through the COVID pandemic and policing violence make this intention even more urgent. Researchers should embrace a more critical bioethics committed to “staying with the trouble” (Haraway, 2016) of race. That is, stay attuned to and critical of the way race “manufactures natures” (Benjamin, 2016), and how it is made visible through sociopolitical practices and ideological discourses to tactically minimize and naturalize inequality. Addressing such questions requires us to illuminate the connections between the multidimensional socially constructed nature of race, on one hand, and the ways such effects produce unequal lived experiences that are reconstituted, mis-measured, or ignored in (neuroscientific) research, on the other. The hope is that this more critical approach to race will help the science make a more effective social change, a contribution that actively contests racial inequality, and thus be “for the people.”

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Race is a meaningless term: Neuropsychology and cognitive neuroscience do not need it

Sergio Della Sala^a and Roberto Cubelli^b

^a Human Cognitive Neuroscience, Psychology, University of Edinburgh, Edinburgh, UK

^b Department of Psychology and Cognitive Sciences, University of Trento, Italy

Chi parla male, pensa male. E vive male.

Bisogna trovare le parole giuste, le parole sono importanti.

(Using wrong terms leads to thinking wrongly; and living wrongly.)

We need to find the right words. Words are important.)

Nanni Moretti (Palombella Rossa, Red Wood Pigeon, 1989)

In the wake of pleas raised in several scientific fields to ban the term “race” from scientific writing, in a recent editorial we have proposed banning it also in our discipline and invited authors not to use it in their submissions to *Cortex*. Obviously, discussing or investigating racism, prejudices or racist attitudes imply the use of the word race. Racism is rooted morphologically and conceptually from race; within antiracist contexts or following antiracist aims, the term race might be inevitable (even if a qualifier like “assumed race” is always preferable). The point is not simply lexical.

Throughout their commentary Trujillo, Kessé and Rollins acknowledge that the term race often provokes false biological connotations of difference. They argue that research on the ‘neuroscience of race’ has been unproductive and inconclusive. Their review of extant research is scholarly and compelling. However, rather than leading them to reject “race” as theoretical construct, oddly it results in the conclusion that using the concept of race (and ensuing categories) in research is not only fruitful but also instrumental to counter racism.

Their argument is summed up by the idea that although race is not biologically real, “it does provoke substantially real impacts in society”, and as such it is useful to investigate differences across groups, exactly as socio-economic status is not biologically based but it does impact society. We agree that people differ for many social, cultural, and economic factors affecting their cognitive performance and their responses in laboratory experiments. Yet, the issue here is whether race could be conceived as a scientific construct, or as a social construct worthy of scientific study. Inequalities do affect neuroscientific and psychological studies, but they cannot be understood in terms of racial differences. Race is a pseudo-scientific concept, the use of which cannot add to knowledge. People do differ due to their relative socio-economic condition; they do not differ for race, simple because “races” do not exist. Hence, it is legitimate to study the origins of this ill-based concept and its detrimental effects, but it is illegitimate to assume it as analytical instrument in scientific research. For

instance, a study geared at investigating processing of face features could make use of racial categories to assess prejudices towards specific traits (race as study object); however, the same categories are irrelevant to study basic mechanisms of face recognition (race as study instrument). Groups of people may even differ for biological factors; consider for instance sickle cell anemia. Therefore, it is justifiable to separate participants in scientific endeavours according to informative ethnic groupings, like having or not a Mediterranean lineage, but without resorting to the undercurrent taint of “race”. Banning “race” does not aim at homogenizing people or denying diversity and different identities.

It is important to stress that race does not overlap with skin color (Jewish people, persecuted as a “race”, are either white or black; racism involves culture, not only physical features); hence, the notion of race is not necessary to investigate inequalities or prejudices based on skin shades. Dropping the term “race” does not make science indifferent to social unfairness based on skin color; on the contrary, positing that variability in skin color is linked to races may induce racism.

Trujillo et al. maintain that a neuroscience of race is useful in countering racism. The aim is noble, but given the spurious nature of the concept, it is akin to suggesting that a neuroscience of the zodiac would be useful in countering reliance in horoscopes and limit ensuing frauds. Logically, the two concepts overlap, yet zodiac is laughable, race is terrifying. The authors contend that preventing scientific racism requires a critical reflection beyond simply changing or omitting terminology. We do agree that fighting racism implies much more than banning a term. However, avoiding a concept that should have no bearing in scientific parlance is a start in the right direction. Given their own considerations on the available data, would it not be preferable speaking of a “Neuroscience of racism” or a “Neuroscience of racial prejudice”? Within this context, the term “race” (and its derivatives) would find its appropriate usage in scientific parlance. We reiterate our invitation to consider the power of words and avoid unsubstantiated terms like “race”.

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