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ARTICLE

Characterizing and Measuring Racial Discrimination in Public Health Research

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Abstract

Experiences of racial discrimination can seem to be caused by one's race, a combination of social identities, or non-social features. In other words, racial discrimination can be intersectional or attributionally ambiguous. This poses challenges for current understandings and measurement tools of racial discrimination in public health research, such as the explanation of racial health disparities. Different kinds of discriminatory experiences plausibly produce different psychological effects that mediate their negative health impacts. Thus, multiple characterizations and measurements of racial discrimination are needed. As a result, I argue that racial discrimination should be a polysemous concept (with multiple meanings).

1. Introduction

Health outcomes in the U.S. vary significantly between different racial and ethnic populations. Black people in the U.S. have a lower life expectancy than white people (Williams et al. 2019). Black, Native American, and Pacific Islander people have earlier symptoms from diseases, worse prognosis, and lower survival rates than white people (Williams et al. 2019). Whether there is a health gap between Hispanic and white populations in the U.S. depends upon how variables are operationalized (Valles 2016), though particular Hispanic subpopulations have worse health outcomes. Public health researchers investigate how racism and racial discrimination contribute to these racial health disparities. In estimating their causal impact, racism and racial discrimination are operationalized such that paradigmatic features and peripheral features are identified. However, these are complex social concepts that take many different forms: institutional racism, interpersonal racial discrimination, internalized racism, etc. Problems arise when researchers all employ similar operationalizations of racism and racial discrimination but seek to make claims about more inclusive constructs.

My thesis has a negative and positive component. The negative component is that some kinds of discriminatory experiences cannot be measured by current methods and this fact hinders the goal of explaining racial health disparities. My positive thesis is that racial discrimination should be characterized in multiple ways to capture

different paradigmatic features and that new methods are required to measure at least one of these characterizations. Some discriminatory experiences are intersectional while others are not clearly attributable to any set of one's social identities. The negative health impacts of racial discrimination are not caused by the same kinds of experiences. Different characterizations of racial discrimination are needed to fulfill the causal explanatory goals of public health researchers. Further, interventions based on one characterization of racial discrimination may not impact negative health effects caused by other kinds. However, public health researchers largely measure only one kind of discriminatory experience. If my argument is correct, one upshot is that researchers need to develop better operational definitions and methods to measure one of these characterizations, namely, discrimination that the victim cannot definitively attribute to their social identity (i.e., attributionally ambiguous microaggressions). Another upshot is that racial discrimination should be understood as a *polysemous* concept, in that it has multiple characterizations that identify different paradigmatic features.

I focus on *experiences* of racial discrimination rather than the causes of interpersonal racial discrimination (e.g., explicit or implicit bias) or structural causes of racial discrimination (e.g., lack of access to preventative health resources). This aspect of racial discrimination is particularly important for measuring the direct impact of racial discrimination on the victim's health and thus, for public health. For example, experiencing some event or interaction as racial discrimination can produce physiological stress responses, psychological responses, and coping behaviors (Williams, Lawrence, and Davis 2019, 112). There are other ways of characterizing racial discrimination in audit studies or large-scale data analysis in fields like economics or political science (e.g., Bertrand and Mullainathan 2004), but these analyses do not attempt to measure *experiences* directly, and so I will set them aside in this paper.

2. Racial discrimination concept for causal explanation

One goal for the concept of racial discrimination is to partially causally explain racial health disparities. This research examines the causal pathways through which racial discrimination (negatively) impacts health, its different effects, and comparisons between multiple racial and ethnic groups that experience racism. While racial discrimination is not the only socio-biological determinant of health, it has become particularly important because public health researchers have called for studies on racism to replace research on racial differences in health (e.g., Lett et al. 2022). Research that studies race differences in health employs "race" as a proxy variable for experiences of racism rather than directly measuring racism. This substitution leads to a number of problems: it leaves findings of racial differences open to essentializing biological interpretations, it often adopts U.S. racial classifications as universally applicable, and it treats race as a variable that cannot be intervened upon, which makes salient race-corrections to health data as an appropriate intervention for racial health disparities. Thus, focusing on the impact of racism and racial discrimination is a more promising explanatory factor of racial health disparities and better suits public health researchers' goal of intervening to promote health equitably across racial populations.

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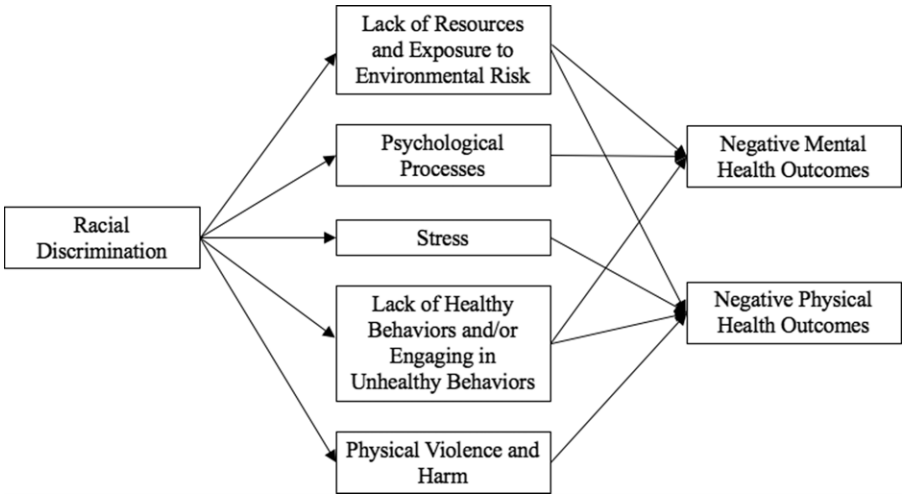

Figure 1. Causal model of racial discrimination's impact on health. Arrows represent causal influence. The middle row are mediator variables. The final row are outcome variables.

Experiencing racial discrimination is associated with worse physical and mental health (Paradies et al. 2015). Mental health is more strongly affected for Asian American and Latina/Latino Americans than African Americans, whereas physical health is more strongly affected for Latino/Latina Americans than African Americans. The research on the relationship between racial discrimination and health seeks to identify mediators of this relationship. Broadly, five major mediators, or causal pathways, between experiencing racism and health are noted in the literature (Paradies et al. 2015): worse access to resources (e.g., preventative healthcare, employment, housing), more exposure to risk factors (e.g., environmental contaminants, police interactions), negative cognitive and emotional processes (e.g., high-quality sleep), fewer healthy behaviors and/or additional unhealthy behaviors (e.g., drinking alcohol), and physical injury from racial violence (Figure 1).

The negative health effects include pre-clinical indicators of disease, such as increased allostatic load, inflammation, and coronary artery calcification (Lewis, Cogburn, and Williams 2015). There are correlations between experiencing racial discrimination and increased reports of hypertension, alcohol use, cardiovascular problems, and disrupted sleep (Williams, Lawrence, and Davis 2019, 113). Even the threat of potential experiences of racial discrimination (defined as vigilance, worry, rumination, and anticipatory stress) increases negative health effects (Brosschot et al. 2006). Thus, experiences of racial discrimination are one potential cause that could (partially) explain racial health disparities in the U.S.

Research seeking to provide a causal explanation of racial health disparities presupposes certain understandings of racial discrimination, which identify paradigmatic features of racial discrimination and link these features with empirical indicators that allow for measurement. For example, one understanding takes a paradigmatic feature of racial discrimination to be discrimination that is perceived to be caused by a person's race or ethnicity. Racial discrimination (in this sense) can be

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measured by producing empirical evidence about the victim's perceptions of the causes of particular discriminatory experiences from the past six months. This understanding of racial discrimination is one of the dominant conceptions in public health research, and the measurement procedure is the dominant one for subjective measures of racial discrimination. However, there are two types of discriminatory experiences that pose challenges for this characterization of racial discrimination. These challenges come from social and critical theories, specifically work on intersectionality and microaggressions.

2.1 Intersectional discrimination

Intersectionality is a concept that was developed through the work of Black feminist theorists and activists (Combahee River Collective Statement 1977/1997, Collins 2002). Broadly, the idea is that the experiences and effects of oppression along one social axis (such as gender, race, or ability) intersect, intensify, and/or color the experiences and effects of oppression along the other axes. For our purposes, we will focus particularly on how experiences can be due to one's membership in multiple social identity groups. As Collins and Bilge (2016, 193) state: "Intersectionality is a way of understanding and analyzing the complexity in the world, in people, and *in human experiences*. The events and conditions of social and political life and the self can seldom be understood as shaped by one factor [but rather as] shaped by many factors in diverse and mutually influencing ways." The relevant claim is that human experiences can be intersectional, including experiences of discrimination. For example, a Muslim woman wearing a hijab in Western Europe may be told by co-workers that she "doesn't need to wear that here." This type of comment may be a discriminatory experience that is based on her gender, race or racialization, and religion.

Discriminatory experiences are sometimes caused by a combination of social identities rather than membership in a single social identity group. For example, much research on racial discrimination and the impacts of racism focuses on the experiences of African Americans (as opposed to Black immigrants in the U.S., Black people outside the U.S., or other racial/ethnic groups in the U.S.). I call these experiences of discrimination "intersectional discriminatory experiences."

2.2 Attributionally ambiguous microaggressions

One major development in measuring discrimination has been the conceptualization of microaggressions as a form of subtle racism. Chester Pierce's work in the 1970s is the foundation of microaggression conceptions today. As Pierce (1978, 65) writes, microaggressions are "subtle, stunning, often automatic, and non-verbal exchanges which are 'put downs' of blacks by offenders. These offensive mechanisms used against blacks are often innocuous. The cumulative weight of their never-ending burden is the major ingredient in black-white interactions." He aimed to pick out subtle, chronic acts of discrimination that were invisible to individuals not experienced in identifying the advantages and disadvantages attached to certain micro-behaviors. Psychologist Derald Wing Sue et al. (2007, 271) revived the microaggressions concept as "brief and commonplace daily verbal, behavioral, or environmental indignities, whether intentional or unintentional, that communicate hostile, derogatory, or negative racial slights and insults toward people of color."

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Their account is so broad that it includes slurs, backhanded compliments, unwelcoming body language, and environmental signals (such as posters linking maleness and computer knowledge) under the same concept. For our purposes, we will focus on one characteristic feature of microaggressions, namely attributional ambiguity. Attributional ambiguity occurs when a person has difficulty determining whether some discriminatory event was caused by their social identities or other non-social-identity features (Rini 2020). In the case of racial discrimination, there can be ambiguity in two ways: whether the event was caused by social identities other than race, or whether features other than their social identities were the cause. Attributional ambiguity refers to the latter.[1]

Attributional ambiguity can be demonstrated by examining one of Derald Wing Sue's experiences. Sue, who is Asian American, and a work colleague, who is African American, choose to sit in the front of an airplane while white passengers who board later do the same. As the weight is unevenly distributed, the flight attendant asks Sue and his colleague to move to the back of the airplane. Sue (2007, 275) describes his immediate thoughts: "Were we being singled out because of our race? Was this just a random event with no racial overtones? Were we being oversensitive and petty?" After confronting the flight attendant, she stated she merely wished to offer them privacy. The conversation ended with no resolution, as Sue "stewed over the incident" for the flight's duration. The key features of Sue's experience are his uncertainty in determining an overall reason for the flight attendant's behavior (his and his colleague's race, random selection, or her reported intentions) and his negative emotional reaction to being unable to attribute a particular reason as the cause of the behavior (rumination).

Some experiences that seem racially discriminatory are nonetheless difficult for individuals to confidently attribute to their social identities. Typically, this uncertainty is due to the availability of alternative explanations for the behavior that do not reference one's social identities. I call these experiences "attributionally ambiguous discrimination."

3. Concepts and measurement

The primary question is whether the experiences of intersectional discrimination and attributionally ambiguous discrimination are captured by the current concepts and measurements of racial discrimination in public health research. First, I will provide some resources for understanding how measurement procedures presuppose understandings of the things being measured. This link can be elucidated by looking at operational definitions. In section 4, I apply these tools to analyze the operational definitions underlying current measurement scales of racial discrimination. Methodologically, I proceed by analyzing assumptions about concepts evidenced by operational definitions rather than analyzing explicit definitions of concepts that researchers propose in theoretical review papers.

Let us first begin with an account of concepts in science. Here I rely on an account of concepts that includes functions centrally. Functional accounts of concepts have

[1] Williams recognizes the potential for attributional ambiguity, but interprets it as ambiguity among different sets of social identities (Williams and Mohammed 2009, 31).

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been important in philosophy of science (Brigandt 2010) and conceptual engineering (Prinzing 2018; Simion and Kelp 2020; Nado 2021), though there are critics of these views (Cappelen 2018; Riggs 2021).[2] On Brigandt's view (2010), concepts have three components: (A) reference, (B) inferential role, and (C) the goal pursued by the concept's use. The reference of a concept is what it refers to in the world. A concept's inferential role is the way a term is properly used. It involves identifying and characterizing features of the concept's referents. Finally, concepts serve different goals, such as epistemic goals like explaining a particular phenomenon, identifying and classifying objects, or setting a research agenda. Some concepts also play social roles, such as protecting legal rights (Brigandt and Rosario 2020) or identifying patterns for consciousness raising. However, here I will restrict my discussion to epistemic goals.

Often the epistemic goals of a concept (such as identifying some phenomenon or providing a causal explanation for some effects for the purposes of intervention) require researchers to produce new empirical data about the referents of the concept. To do so, they link the features present in the inferential role to operations that can be performed in experimentation. Operationism in some cases took providing an operational definition to constitute the entire meaning of the concept (Bridgman 1927/1946, 5). Simplistically, an operational definition might take the following form:

> The application of the concept is appropriate iff when this operation O is performed, it will produce the following empirical indicators I.

The empirical indicators should be producible by some set of operations (e.g., experimental protocol). A psychologist studying memory will employ a particular operational definition of this concept in their experiment. Suppose the psychologist has participants study a list of words (e.g., heart, romance). She then gives participants some distractor task to complete. Then she asks participants to complete a list of ambiguous letter strings, such as "lo_ _," that can be completed with multiple different letter combinations (e.g., love or lose). The completion of these letter strings into English words is the operation that produces empirical indicators (the specific words used to complete the letter strings). When these empirical indications are semantically related to the previously learned list of words (as in the case of "love"), she can claim that a participant has remembered the content of the previous list of words.

However, the "iff" is too strong in our operational definition. Returning to the case of memory, researchers may never run a particular memory experiment, and in such cases, we would not claim that a particular person has remembered something. Carnap (1936/1937) demonstrated that the conditional makes the application of the concept permissible even when the operation is never performed but can be understood counterfactually. Further, based on contemporary uses of operational definitions in psychology, Feest (2005) has argued that providing an operational definition of the concept involves specifying a temporary and partial definition of

[2] Here I set aside thorny issues with functional accounts of concepts. In the context of this paper, it is appropriate to describe the concept's function as contributing to a causal explanation of racial health disparities.

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some concept in terms of empirical indicators of the referents of the concept. This move avoids proliferating operational definitions (a critique raised by Hempel's 1954 paper), which would result if each operational definition fully exhausted the concept. It also allows for multiple operations to be associated with the same concept, which is foundational for psychological and social science when calibrating or triangulating. In the memory case, the claim that operational definitions are temporary and partial allows researchers to measure a participant's propositional memory without claiming that all memory is propositional. After all, psychologists also investigate non-propositional memories in the form of skills and know-how. Thus, we can revise the form of operational definitions:

> If this operation O were to be performed, *and* it produced the following empirical indicators I, then the application of the concept is appropriate.

The racial discrimination concept has causal explanatory goals particularly in public health research. However, the concept can also have social, legal, and political goals. Racial discrimination may be characterized in different ways to meet these different goals, but I set aside this question here. Instead, I will ask: Even when we restrict our attention only to its causal explanatory goal in public health research, do researchers need multiple ways of characterizing and measuring racial discrimination? I argue that they do, because many kinds of discriminatory experiences are relevant to their explanatory goal. However, current characterizations and measures of racial discrimination focus on only a subset of cases that are clearly caused by the victim's race.

4. Prominent scales of racial discrimination

Let us now turn to current subjective measures of discrimination. Here I will outline the operational definitions used by two major scales of racial discrimination. I argue that both operational definitions and their accompanying scales currently fail to measure intersectional discrimination and attributionally ambiguous discrimination.

4.1 Williams' Everyday Discrimination Scale

The Everyday Discrimination Scale is aimed at measuring pervasive, routine, chronic and diffuse experiences of racial discrimination as opposed to major experiences of discrimination (e.g., hate crimes) (Williams et al. 1997, 338). The scale is as follows:

"In your day-to-day life, how often do any of the following things happen to you?

- You are treated with less courtesy than other people are.
- You are treated with less respect than other people are.
- You receive poorer service than other people at restaurants or stores.
- People act as if they think you are not smart.
- People act as if they are afraid of you.
- People act as if they think you are dishonest.
- People act as if they're better than you are.
- You are called names or insulted.
- You are threatened or harassed.

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Response categories:

> Almost everyday
> At least once a week
> A few times a month
> A few times a year
> Less than once a year
> Never"

Then the scale includes a second question:
"What do you think is the main reason for these experiences?

- Your ancestry or National Origins
- Your Gender
- Your Race
- Your Age
- Your Religion
- Your Height
- Your Weight
- Some other Aspect of your Physical Appearance
- Your Sexual Orientation
- Your Education or Income Level"

Everyday racial discrimination is measured by asking participants to first identify and report the frequency and domains in which they have everyday discriminatory experiences. Then they are asked to identify the cause (or "main reason") of those experiences among a list of social categories (e.g., race). The operational definition of racial discrimination used is:

> A participant has experienced racial discrimination if when they are asked to self-report their social identity that was the "main reason" for their experiences of discrimination in everyday contexts, they attribute these discriminatory experiences to their race.

Researchers disagree about how best to focus on *racial* discrimination using these two-question scales. The first question asks the participant to identify discriminatory experiences in general, and only the second question allows the researcher to focus on experiences of *racial* discrimination. Researchers select for cases where participants indicate the *main reason* for the experience was their race, but in doing so undermine the ability to measure intersectional discrimination. For example, one major meta-analysis explicitly excluded papers that used a broader version of the Everyday Discrimination Scale that included non-racial kinds of discrimination (Paradies et al. 2015). The authors do not explicitly consider intersectional discrimination, but in excluding papers that examine discrimination more broadly, they exclude its measurement. However, in order to capture intersectional discrimination, one might adapt the scale to examine experiences where the "main reasons" include race and other social

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identities. In fact, some have updated their operational definitions and scales in this way, as we will see in section 5.

The inclusion of ambiguous discrimination is more difficult because the procedure of employing the scale suppresses the ability of participants to report them. I argue for this claim in section 5.

4.2 Krieger's Experiences of Discrimination scale

The Experiences of Discrimination scale, developed by Nancy Krieger and colleagues (Krieger 1990; Krieger et al. 2005), asks about the frequency of discriminatory experiences based on race and ethnicity in different contexts. The relevant part of the scale concerning everyday discrimination is the following (Krieger et al. 2005, 1590):

> "Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your race, ethnicity, or color?
>
> - At school?
> - Getting hired or getting a job?
> - At work?
> - Getting housing?
> - Getting medical care?
> - Getting service in a store or restaurant?
> - Getting credit, bank loans, or a mortgage?
> - On the street or in a public setting?
> - From the police or in the courts?"

By including the attribution of the discriminatory experience to race/ethnicity, this scale asks participants to first identify discriminatory experiences that are specifically attributed to race. Unlike the previous scale, participants are asked first to identify those discriminatory experiences that are attributable to race and then to report contexts for only those experiences. The operational definition employed by this scale is:

> A participant has experienced racial discrimination if when they are asked to self-report whether they have felt hassled, inferior, or barred from some action on the basis of race, ethnicity, or color, they report experiencing this in different everyday contexts.

This operational definition also does not capture experiences of intersectional discrimination and attributionally ambiguous microaggressions. The scale asks participants for discriminatory experiences that can be attributed to race, ethnicity, and color, which rules out the identification of intersectional discriminatory experiences. The scale cannot be adapted without substantial changes. This scale faces the same problems as the Williams' scale in measuring attributionally ambiguous discrimination (see section 5).

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5. Addressing the measurement problems

The most frequently used scales to measure racial discrimination fail to capture some types of racial discrimination, namely, those that are intersectional or attributionally ambiguous. However, measurement instruments are not set in stone. In this section, I argue that while researchers can modify current scales to measure intersectional discrimination, their operational definition of racial discrimination limits modification of existing scales to measure attributionally ambiguous discrimination. Instead, new measures are needed.

5.1 Accounting for intersectional discrimination

Qualitative research shows that many participants believed discriminatory experiences were due to their multiple social identities. Harnois, Bastos, and Shariff-Marco (2020) interviewed multiply marginalized individuals about their experiences of discrimination. In one salient example, participant Trayonna is asked to identify the main reason for the discriminatory experience (i.e., which of her social identities were causally responsible for eliciting it). She states, "Educational and employment background. Nationality. Complexion. Maybe my weight?" and adds after interruption by the interviewer, "And my gender." When the interviewer presses Trayonna to identify the main reason, she describes that all of these features are relevant to this discriminatory experience: "Educated black woman is really [it]" (Harnois, Bastos, and Shariff-Marco 2020, 994). She denies the ability to identify a main reason for this treatment because she understands the discriminatory experience to be intersectional.

Harnois, Bastos, and Shariff-Marco (2020) also found that some individuals report a main reason for their experiences of discrimination on quantitative scales, even when this did not accurately describe their experiences. In qualitative interviews, individuals attributed some discriminatory experiences to their multiple social identities, but then when responding to the quantitative questions, they selected a main reason. Thus, quantitative scales like Williams' and Krieger's scales obscure some intersectional discriminatory experiences.

Scheim and Bauer attempt to address the problem of measuring intersectional discrimination by introducing the Intersectional Discrimination Index. The scale is as follows (Scheim and Bauer 2019, 228; emphasis in original):

"Because of who you are, have you . . .

- Heard, saw, or read others joking or laughing about you (or people like you)
- Been treated as if you are unfriendly, unhelpful, or rude
- Been called names or heard/saw your identity used as an insult
- Been treated as if others are afraid of you
- Been stared or pointed at in public
- Been told that you should think, act, or look more like others
- Heard that you or people like you don't belong
- Asked inappropriate, offensive, or overly person questions
- Been treated as if you are less smart or capable than others.

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Response options:

- Never
- Yes, but not in the past year
- Yes, once or twice in the past year
- Yes, many times in the past year"

Participants are told to interpret the phrase "Because of who you are" as including "skin color, ancestry, nationality, religion, gender, sexuality, age, weight, disability or mental health issue, and income." The researchers modify the explanatory characterization of racial discrimination to a broader concept of social identity discrimination. More specifically, the operational definition is:

> A participant has experienced social identity discrimination if when they are asked to self-report whether they have experienced various everyday unfair treatment that is "because of who they are," they report experiencing this treatment at some point in their lives.

This revised operational definition expands the scope of discriminatory experiences that are being measured. It measures discriminatory experiences that are a combination of one's social identities. However, it would need a slight modification to capture intersectional discrimination that is in part racial. Currently, participants do not report which of their social identities they take to be relevant causes of the discriminatory event. This is a problem for researchers specifically interested in *racial* discrimination because they need to clearly identify when race is among the causes. Thus, with some modification, the Intersectional Discrimination Index could measure intersectional discrimination for which race is one cause.

However, this operational definition does not include instances of attributionally ambiguous discrimination. To report a discriminatory experience, the participant needs to determine that it is "because of who they are" (i.e., attributable to their social identities). The Intersectional Discrimination Scale maintains the general structure of the Experiences of Discrimination Scale: First identify discriminatory experiences that are due to one's social identities and then report the context of this experience. As a result, this scale similarly excludes or misclassifies reports of attributionally ambiguous discrimination.

5.2 Accounting for attributionally ambiguous discrimination?

The claim that both of these scales do not measure attributionally ambiguous cases of discrimination requires support. Why think that participants do not report ambiguously discriminatory experiences in response to these scales? Here I appeal to the idea of reactivity, or the disposition of participants to respond to experimental features. Experimentation requires designing experimental conditions that generate the right kind of reactivity while suppressing other reactivity (Feest 2022). Reactivity is crucial for experimentation because it provides researchers access to psychological processes and their outcomes.

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My contention is that these scales generate reactions about experiences of clear racial discrimination and suppress reporting of ambiguous discriminatory experiences. The design of the task is not supposed to elicit responses about attributionally ambiguous cases. The question explicitly asks about cases with clear attribution that participants can recall and identify occurred "because of [their] race, ethnicity, or color." There are two additional reasons to think participants do not report ambiguous experiences.

First, some discriminatory actions measured by Williams' and Krieger's scales, such as being threatened or harassed, being called names or insulted, and being followed around stores, are less plausibly given alternative explanations for the person's behavior that do not depend on the victim's race. For example, when a white store owner follows a Black shopper throughout the store, the question is whether a plausible alternative explanation for the shop owner's behavior is salient. Given the frequency of the stereotype that Black people are shoplifters, the Black shopper likely finds any alternative explanation implausible. It simply does not fit with their life experiences that white store owners behave in this way without acting on the basis of race. Contrast this case with more subtle cases: A Latina student asks her classmate where he is from. He was born and grew up in Canada, but his parents immigrated from China. Was her question motivated by his race? Did it have an underlying implication that he is not really Canadian? Or was she interested in whether he grew up in the Vancouver area? In some situations, the context may not settle this ambiguity because there are plausible alternative explanations that do not rely on his race, but the interaction is the kind of thing that *could be* discriminatory. As a result, I predict that participants given Williams' or Krieger's scales will be less likely to identify cases where they are uncertain about whether their race was a cause of the other person's behavior, and so ambiguous discriminatory experiences will not be reported.

Second, some questions require attribution of normative concepts, and so the stakes of attribution are higher. Here the idea is akin to inductive risk (e.g., Douglas 2000) and moral encroachment (e.g., Basu 2019), but for attribution of normative concepts to individual's actions rather than acceptance/rejection of a hypothesis or belief. Both scales refer to disrespectful treatment, discriminatory treatment, and being made to feel inferior. In cases where the behavior is ambiguous between being caused by one's race and being caused by some other non-social-identity feature, I predict individuals are used to disagreement about whether the actor was *clearly* acting disrespectfully, discriminating, or inferiorizing and thus less likely to report these cases. My prediction is motivated by recognizing that there are consequences to normatively labelling everyday behavior that can also be interpreted innocuously (M. Williams et al. 2021; McTernan 2018; Kaiser and Miller 2001). It is a common response that third parties question whether some alternative explanation could explain the behavior without attributing normatively bad intentions to the discriminator.

Consider a recent conversation I had: A faculty member mentors many junior scholars who are men, but no women. There are a number of ways to explain this fact. The faculty member could be cautious about forming casual relationships with women and typically mentors in a casual way, which is an explanation that was suggested by my colleague. But it might also be that the faculty member chooses to mentor those students he evaluates to be rising stars, and he has a gendered

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stereotype about what sort of behaviors provide evidence that someone is a rising star. Suppose my colleague found it unjustified to label this professor's mentoring practices as discriminatory. This rejection of the label "discrimination" might be due to the existence of alternative explanations that do not attribute morally bad beliefs or behavior to the faculty mentor. If I persisted in claiming this behavior was discriminatory, then hypothetically my colleague may even claim that I am merely "oversensitive" and that I see discrimination even where it is not (a phenomenon Sue aptly notes). A reasonable defense mechanism to this kind of behavior is to avoid labeling these experiences with normatively forceful concepts (disrespect, discrimination, and inferioritization) under conditions where these labels can be alternatively explained. Thus, when choosing whether to label some behavior as discriminatory, those discriminated against may evaluate the extent to which they will receive these kinds of responses and as a result, raise the threshold for how clear a case must be to label it "discriminatory."

I have argued that the Everyday Discrimination Scale and the Experiences of Discrimination Scale cannot measure attributionally ambiguous discrimination because these scales suppress the reporting of these experiences. One might think that the situation is improved for measures of microaggressions, given that Sue was partly motivated by experiences like those with the flight attendant to revitalize Pierce's theory of microaggressions. However, similar problems with measurement impact prominent microaggression scales.

The Racial and Ethnic Microaggressions Scale (Nadal 2011) includes questions that require participants to identify a main reason for their experiences. Other questions might allow reports about ambiguous discriminatory experiences, such as, "An employer or co-worker treated me differently than White co-workers" (Nadal 2011, 474). Still, in the context of the other 44 survey items, it is likely that participants have already been primed to think of unambiguously racial experiences when responding. In developing this scale, Nadal and colleagues removed items that could be interpreted ambiguously because they did not fit well with other items in their factor analysis. For example, Nadal (2011, 478) states that they removed items like, "I have been accused of being too loud" and, "I have been accused of being too quiet" because, "some individuals may interpret such experiences as being racially related, whereas some may view these as critiques of one's personality." Thus, one of the major existing microaggression scales does not measure attributionally ambiguous microaggressions. Further, some researchers do not take attributionally ambiguous microaggressions to be the proper target of the scale's measurement. These microaggression scales cannot aid in revising our operational definition of racial discrimination to include attributionally ambiguous cases.

Given these difficulties, I suggest that public health researchers should develop new scales to measure attributionally ambiguous discrimination to better fulfill their explanatory goals.

6. Lessons for public health researchers and policy-makers

If my argument that some kinds of discriminatory experiences are not captured by current subjective measures succeeds, then there are a number of implications for public health research and for the aim to explain racial health disparities. Here I

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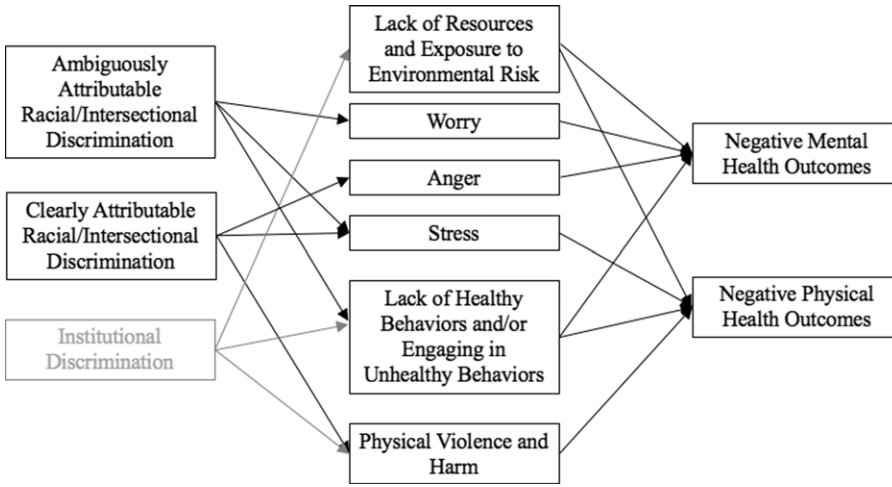

Figure 2. Revised causal model of the impacts of racial discrimination on health. Ambiguous attributable forms of discrimination are distinguished from clearly attributable forms. Arrows represent plausible causal influences. The middle row represents mediator variables. The final row represents outcome variables. Institutional discrimination is plausibly another form but is grey to represent the lack of analysis in this paper.

suggest three consequences: the causal pathway model should be revised, attention should be paid to context-sensitivity when exporting measurement scales to policy settings, and the design and evaluation of interventions should take into account different characterizations of racial discrimination.

6.1 Different characterizations, different causal pathways

Here I sketch a view on which the different kinds of discrimination (clearly and ambiguously attributable discrimination) cause different kinds of health outcomes. For public health researchers, this sketch suggests a more complicated causal diagram of the impact of racial discrimination on health. If correct, explaining racial health disparities would require both characterizations of racial discrimination (and ways of measuring each).

In one meta-analysis of the negative impacts of racial discrimination, Paradies et al. (2015) found that 72% of studies examining negative mental health outcomes (such as emotional distress, depressive symptoms, and stress) found positive correlation with racial discrimination. 62% of studies measuring health behaviors (such as cigarette smoking, alcohol abuse, and substance abuse) found a positive correlation with experiences of racial discrimination. Of the studies examining negative physical health outcomes (such as hypertension, low infant birth weight, and diabetes), 36% found a positive correlation with racial discrimination. However, this meta-analysis does not distinguish attributionally ambiguous discrimination from unambiguous cases. My proposal is that at least two characterizations of racial discrimination are necessary to explain all of these negative health effects (Figure 2).

Experiences of attributionally ambiguous racial discrimination may cause different mediators, such as chronic stress and depressive rumination, than attributionally

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clear racial discrimination. Research has indicated already that chronic stress is a major mediator of the relationship between experiencing racial discrimination and negative health outcomes (e.g., Sellers et al. 2003). According to Brosschott et al. (2006), perseverative cognition, such as worry and rumination, can serve both as a proximal stressor and a mediator between psychosocial stressors and physiological effects. It can do so by prolonging the immediate effects of stressors into chronic activation of physiological processes, which can result in negative physical and mental symptoms. For example, perseverative cognition is associated with more somatic complaints (like headaches, fatigue, intestinal discomfort), elevated cortisol levels (and thus suppression of the immune system), and increased heart rate and reduced heart rate variability. It is a risk factor for anxiety disorders and depression. One study found that rumination mediated the relationship between racial discrimination and depression symptoms among African American youth (Bernard et al. 2022). Rumination as a response to racial discrimination has also been identified as a factor in poor sleep among African Americans (Hoggard and Hill 2018).

Attributionally clear racial discrimination, on the other hand, is more likely related to mediators like anger. Some evidence for this prediction comes from Williams and colleagues' (2012) study assessing the Major Experiences of Discrimination scale, which asks about major events such as being denied a promotion, being abused by police, and being denied a bank loan (Williams et al. 2008). Using the 19-question version of Williams's scale, Williams et al. (2012) found: (1) that participants were highly certain in their attributions of the cause of discrimination (race or non-race-based) and (2) high correlations between these discriminatory experiences and feelings of anger or frustration.[3]

Supposing my predictions are correct, this poses a problem for explanations of racial health disparities and for interventions aimed at equitably reducing health disparities (see section 6.3). For explanations of racial health disparities, ignoring attributionally ambiguous discrimination and its proximal effects means that researchers may underestimate the extent to which racial discrimination can explain the existence of racial health disparities. As a result, racial discrimination may be down-played as a social determinant of health. Further, the remainder of racial health disparities that cannot be explained by racial discrimination could be attributed to other factors, such as biological differences, cultural differences, and/or non-racial social features. If these cases are properly understood as racial discrimination, then it is an error to categorize their effects as due to these other factors.

6.2 Context-sensitivity of racial categorization when exporting measures

One lesson of my arguments is that measurement tools presuppose specific understandings of the phenomenon being measured. Operational definitions leave out certain features of a phenomenon and focus on others. With complex social

[3] It may seem that Williams and colleagues show that attributionally ambiguous experiences do not exist. From the relatively few reports of participants who had low confidence in attributing the cause of their discriminatory experiences to race, Williams et al. (2012, 977) infer that "ambiguity about the cause of discrimination was rare." Here I am providing an alternative view that would also predict this data; ambiguous discriminatory experiences are not measured on Williams's scales (Major or Everyday) and thus, their data cannot bear on questions of their frequency nor their effects.

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science concepts like racial discrimination, this should be expected. However, it does suggest that our measures of these concepts are context-sensitive. The context-sensitivity of these assumptions becomes clear when scales are exported in policy settings to new populations. Krieger's measure has been exported beyond U.S. populations by various policy groups. The European Commission report on measuring discrimination (2007) has adapted Krieger's scale to measure ethnic discrimination across Europe. Likewise, the Afrozensus (2020), a community-led project to estimate the extent and types of anti-Black racism in Germany, has adopted Krieger's scale to measure racial discrimination.

Policy groups that adapt measures like Krieger's scale should consider whether the replacement of "racial" by "ethnic" is a sufficiently context-sensitive adaptation. Germany does not collect national data that is stratified by "race." Instead, data is collected about "migration background," which is defined as having a family history of migration to Germany within the last 50 years. The Afrozensus group argues that the replacement of "race" with "migration background" leaves out many Black Germans who do experience racial discrimination but lack a migration background. Further, in German contexts where "Rasse" and "Rassismus" are not discussed explicitly, we might expect attributional ambiguous discrimination to be more frequent than in other European countries. In particular, some Germans may be particularly hesitant to use normative labels for certain experiences (as discussed in section 5.2).

Meanwhile, the EU Commission's replacement of "race" with "ethnicity" ignores the fact that some ethnic groups are racialized. For example, in Poland it is likely that most participants will not report racial discrimination because they are white. Yet, in some European contexts, Eastern Europeans are racialized and may have relevant *racialized* discriminatory experiences that will not be measured.[4] In this case and the case of Black Germans, I predict that the narrow conception of racial discrimination underlying measurement scales (like Krieger's) will underestimate the extent of racial discrimination.

6.3 The specificity of interventions

Public health researchers and policy-makers aim also to intervene to reduce inequitable racial health disparities. Targeted interventions on racial health disparities are informed by the current research. When racial discrimination is primarily investigated using a single characterization of the concept, then interventions may only partially address the problem. Potential interventions based on attributable cases of racial discrimination and their effects may focus on promoting community identification among racial and ethnic communities, value affirmation exercises (Williams and Purdie-Vaughns 2016), or education programs targeted at discriminators (Paradies et al. 2009). However, if different kinds of discriminatory experiences produce different causal effects, then these interventions may leave intact the causal pathway to other negative health impacts (i.e., worry, rumination). An intervention focused on reducing attributionally ambiguous discrimination might instead seek to change social norms and expectations about

[4] Thank you to Joanna Malinowska for raising this point.

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whether concepts like "racism" or "racial discrimination" involve all-or-nothing attributions (Liao and Hansen 2021) or promote recognition of alternative explanation responses as a rhetorical tool that is used to produce deniability (Friedlaender 2021). Finally, to the extent that discrimination is intersectional, interventions focused on reducing other health disparities, e.g., based on socioeconomic status, should also be considered for their potential effects on racial health disparities.

This issue compounds with the general logic of many studies of racial discrimination: When we control for known factors, the remaining outcomes are attributed to an unmeasured factor. Typically this logic is used to estimate racial discrimination itself, such as in field experiments that control for differences in, e.g., socio-economic status, and attribute any differential outcomes to racial discrimination. When researchers assume racial discrimination is wholly captured by attributable cases, they may conclude any remaining racial health disparities are not due to racial discrimination. One troubling possibility is that often biological differences (e.g., genetic) go unmeasured in this research. Some might employ the logic to argue that the remaining differences in negative health outcomes between populations are due to biological differences rather than structural ones. Further, if these interventions were successful in reducing some kinds of racial discrimination, that can create conditions of deniability for some governments and policy-makers. By assuming a single understanding of racial discrimination, these institutions can claim that racial discrimination in some population is no longer a significant problem, as was recently done by the U.K. Commission on Race and Ethnic Disparities (2021). In effect, this rhetoric involves denying any further interventions are necessary.

Thus, ignoring ambiguously attributable discrimination and its measurement can impact many goals in public health research and policy. Attending to the diversity of racial discrimination experiences can improve our causal models of its impact on racial health disparities, the context-sensitive export of measurement scales to other countries, and the evaluations of intervention effectiveness.

7. Racial discrimination as a polysemous concept

So why do these measurement problems arise for the dominant conception of racial discrimination in public health research? I suggest that the measurement problems have roots in the fact that researchers need different characterizations of racial discrimination. Philosophically, we can account for these different characterizations that contribute to the same epistemic goal by recognizing that racial discrimination should be a polysemous concept. Philosophers of cognitive science have debated the extent to which representations of concepts (e.g., prototype, exemplar, and theory) are heterogenous, pluralistic, or hybrid (Machery and Seppälä 2011; Weiskopf 2009; Vicente and Martinez Marique 2016).[5] Many philosophers have demonstrated that many concepts in science have different senses and referents in research contexts

[5] There are further questions about how debates about the psychological representation of concepts relates to polysemous concepts. Machery and Seppälä (2011) take polysemous concepts to be heterogenous, but Vicente and Martinez Marique (2016) take them to be hybrid. Also, polysemy is sometimes viewed as committing to a "core meaning" for all instances (e.g., prototype) or to rich representations of all the different senses (e.g., exemplar) (Vicente 2018).

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(Griffiths and Neumann-Held 1999; Novick 2018; Haueis 2021; Burnston and Haueis 2021).

Polysemy in linguistics describes when a word or term has multiple meanings that are related. The term "milk" can mean the activity done to lactating mammals or the drink that is the product of that activity. Contrast polysemy with homonymy, where a single term may have multiple but unrelated meanings, such as the word "bank" meaning land adjacent to a river and a financial institution. For our discussion, I will consider polysemous concepts to be those concepts that have what I have been calling different *characterizations*, each of which specifies an inferential role, has a particular set of referents, and fulfills some epistemic and/or social goal(s). Concepts can be polysemous when there are multiple characterizations that: (1) highlight different inferential roles but (2) are related.

My argument is for the claim that we need different characterizations of racially discriminatory experiences to capture cases of attributionally ambiguous discrimination and attributionally clear racial discrimination (including racial discrimination and intersectional discrimination). There are at least three characterizations of discrimination: (1) drawing distinctions between social groups with or without importing normative significance (e.g., statistical discrimination), (2) articulating or putting into effect group-specific norms, rules, or evaluative standards, and (3) internal mental states (such as stereotypes or intentions) leading to differential treatment towards an individual because of their presumed group membership (Lippert-Rasmussen 2018; Beeghly 2021).

My claim is that these different characterizations are necessary for investigating the negative health effects of racial discrimination. Consider Sue's experience with the flight attendant. It is the very question of whether she treated Sue and his colleague differently due to their race or held inferiorizing beliefs about African Americans and Asian Americans that is up for debate in Sue's own experiences. However, this interaction is well captured by the second characterization of discrimination. Regardless of intent, the interaction was at least articulating and reinforcing a norm that African Americans and Asian Americans are less worthy than whites of small pleasures and conveniences. Thus, Sue's experiences are captured by the second characterization *and* by merely possibly fitting with the third characterization. This latter part follows from the subtlety of the interaction and the availability of alternative explanations for the flight attendant's behavior. Note however that the possibility of alternative explanations does nothing to undermine the function the interaction might have in reinforcing norms about the deference of Black and Asian people to white people (see also Pierce 1978 on "offensive mechanisms").

Yet, other kinds of discriminatory experiences (which are measured by current tools) fall under the first and third characterizations. Relevant experiences that fall under the first characterization of discrimination would be those in which someone experiences being treated differently, such as with disrespect or with less trust, than those of another social group. Some experiences may also focus particularly on the beliefs or intentions that have caused the behavior. For example, some experiences of discrimination may focus on people acting in a way that indicates they do not think the victim is intelligent because of their membership in a specific social group. Thus, to capture different kinds of discriminatory experiences, we need to reference different ways of characterizing the nature of racial discrimination.

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One interesting consequence of treating this case as one in which the concept should be polysemous is that it shows that sometimes different characterizations of a concept are needed to meet a single epistemic goal. Examples of polysemous concepts in philosophy of science literature have tended to focus on characterizations of concepts that are needed for different epistemic goals. For example, Brigandt (2010) argues that the contemporary molecular gene concept has multiple characterizations in order to serve diverse research goals. Researchers interested in RNA may employ a gene concept with many-to-one mapping between genes and RNA, while researchers studying peptides might employ a gene concept with a many-to-many mapping between genes and peptides. According to Brigandt (2010, 34) there is still unity to the gene concept because each characterization serves the same epistemic goal: explaining "how genes bring about their molecular products." Brigandt's philosophical upshot concerns the rationality of conceptual change (as in the move from a one-to-one classical gene concept to different molecular gene concepts). My arguments extend his work to demonstrate that in some cases, researchers should retain diverse characterizations of a concept when it helps them better fulfill the same goal.

Contra Haueis (2021), my analysis provides an example of different conceptual characterizations contributing to the same epistemic goal without integration of the characterizations.[6] Haueis (2021) accounts for the unity of polysemous concepts in terms of integration and provides four conditions for integrating different characterizations, of which only the last is relevant. The fourth criterion holds that two characterizations are integrated if they "can be combined to achieve an epistemic goal associated with the patchwork [i.e., polysemous] concept" (Haueis 2021, 32). Here the different understandings of racial discrimination are not integrated via multi-scale models nor multi-scale explanations. In fact, the difference between the characterizations is not related to scale at all. Rather the difference lies in the content of each characterization: whether racial discrimination is taken to involve clear attributability to one's social identities. As a result, these characterizations themselves cannot be integrated and scales tend to adopt an operational definition based on only one characterization. Although integration may be one way to account for the unity of polysemous concepts, it is not the only way. Extending Brigandt's account, the unity can also be achieved by contributing to the same goal.

8. Conclusion

I have argued that distinct characterizations of racial discrimination are needed to measure different types of discriminatory experience: namely, discriminatory experiences that can be clearly attributed to the victim's social identities (including race) and those that are ambiguous between attributions to the victim's social identities and other features of the situation (unrelated to the victim's social identities). I have sketched an account of how these two types of experience may cause different kinds of health outcomes via different mediators. Clearly attributable racial discrimination is likely related to responses such as anger, whereas attributionally ambiguous discrimination is likely related to rumination, worry, and their associated health effects. This claim holds even when we restrict our

[6] Thank you to an anonymous reviewer for suggesting this point.

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attention to the use of the racial discrimination concept in causally explaining the relationship between racial discrimination and racial health disparities in the U.S.

There are two upshots to my argument: one for philosophy of science and one for public health researchers. First, I have demonstrated a current gap in psychological and sociological research on the negative health impacts of racial discrimination. Attributionally ambiguous cases of discrimination are not measured by current scales, including microaggression scales. This gap exists despite the fact that prominent microaggression researchers have appealed to the idea of attributional ambiguity in their understanding and motivation of the microaggression construct. Thus, we need new measures to track this sort of discriminatory experience and to measure its (potentially distinct) causal impact on health. Second, I argued that racial discrimination ought to be considered a polysemous concept, even when restricting our attention to the context of public health research. If this argument is correct, different characterizations should be preserved when both are needed to satisfy the same function (i.e., causal explanation). Further, it expands on debates about what unifies the different characterizations of a polysemous concept. Haueis suggests that integration of the characterizations (through multi-scale models or explanations) is one way to provide unity. However, my analysis of the racial discrimination case fits better with an extension of Brigandt's views that unity can be grounded in contributions to the same function.

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