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Theory-Guided Selection of Discrimination Measures for Racial/Ethnic Health Disparities Research among Older Adults

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Abstract

Objectives—Discrimination may contribute to health disparities among older adults. Existing measures of perceived discrimination have provided important insights but may have limitations when used in studies of older adults. This paper illustrates the process of assessing the appropriateness of existing measures for theory-based research on perceived discrimination and health.

Methods—First we describe three theoretical frameworks that are relevant to the study of perceived discrimination and health – stress-process models, life course models, and the Public Health Critical Race praxis. We then review four widely-used measures of discrimination, comparing their content and describing how well they address key aspects of each theory, and discussing potential areas of modification.

Discussion—Using theory to guide measure selection can help improve understanding of how perceived discrimination may contribute to racial/ethnic health disparities among older adults.

Keywords

race/ethnicity; discrimination; disparities; measurement

Introduction

Discrimination, unfair treatment based on personal characteristics or group membership (Williams, Yu, Jackson, & Anderson, 1997), is a potential determinant of racial/ethnic health disparities among older adults (N. B. Anderson, R. A. Bulatao, & B. Cohen, 2004; R Clark, 2004). A recent meta-analysis (Pascoe & Richman, 2009) concluded that perceptions of discrimination[1] produces heightened stress responses and has a significant effect on

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health. Experiences of discrimination can be severe events such as being prevented from moving into a neighborhood, or routine hassles such as receiving poorer service than other people at restaurants and stores (Williams et al., 1997). Discrimination is an experience shared by most people but more often reported by racial/ethnic minorities (Kessler, Mickelson, & Williams, 1999), including older adults (Barnes et al., 2004). This may lead to a higher burden of stress among minorities that, over time, contributes to disparities in health (Pearlin, Schieman, Fazio, & Meersman, 2005; Sternthal, Slopen, & Williams, 2011).

Interest in the relationship between perceived discrimination and health-related outcomes is apparent from several reviews of the literature (Brondolo, Gallo, & Myers, 2009; Harrell, Hall, & Taliaferro, 2003; Krieger, 1999; Paradies, 2006; Pascoe & Richman, 2009; Williams & Mohammed, 2009; Williams, Neighbors, & Jackson, 2003). Studies of older adults are more recent, with research finding that perceived discrimination is associated with mental health (Barnes et al., 2004; Boardman, 2004; Jang, Chiriboga, Kim, & Rhew, 2010; Jang, Chiriboga, & Small, 2008; Lewis, Barnes, Bienias, Lackland, Evans, & de Leon, 2009; Taylor, Kamarck, & Shiffman, 2004) , physical health (Barnes et al., 2008; Roberts, Vines, Kaufman, & James, 2008), biological measures (Albert et al., 2008; Friedman, Williams, Singer, & Ryff, 2009; Lewis, Aiello, Leurgans, Kelly, & Barnes, 2010; Lewis, Barnes, Bienias, Lackland, Evans, & de Leon, 2009), and preventive service use (Crawley, Ahn, & Winkleby, 2008; Dailey, Kasl, Holford, & Jones, 2007; L. R. Hausmann, Kressin, Hanusa, & Ibrahim, 2010; L. R. M. Hausmann, Jeong, Bost, & Ibrahim, 2008).

Within this growing body of research, the measurement of perceived discrimination is consistently noted as a limitation to better understanding its effects on health (Brown, 2001; Krieger, 1999; Paradies, 2006; Williams & Mohammed, 2009). Previous reviews have catalogued perceived discrimination measures by conceptual dimensions, exposure time frame, length, and administration type (Kressin, Raymond, & Manze, 2008; Paradies, 2006), assessed their psychometric properties (Bastos, Celeste, Faerstein, & Barros, 2010), and considered their appropriateness for assessing healthcare discrimination (Kressin et al., 2008). The applicability of measures for research within theoretical frameworks evoked in the racial/ethnic health disparities literature, however, is less discussed.

The purpose of this paper is to describe three theoretical frameworks – stress process, life course, and the Public Health Critical Race praxis – that hold promise for explaining mechanisms by which perceived discrimination may affect the health of older adults, and to consider how these perspectives shape our understanding of the content and utility of different measures. These frameworks incorporate complementary and sometimes parallel concepts when describing the biopsychosocial factors that help explain racial/ethnic disparities in health. Our focus is on racial/ethnic discrimination, the most common type reported by racial/ethnic minorities in the United States (Kessler et al., 1999). We discuss how discrimination would need to be measured to conduct research using each of these frameworks and review four well-known measures of perceived discrimination in terms of their applicability. In addition to identifying measurement issues in studying mechanisms by which discrimination affects health, our approach also illustrates the process of reviewing measures for appropriateness to particular research questions, including potential modifications that might be needed.

[1]We consider discrimination to be an action or behavior that causes harm regardless of perception by the target individuals or groups. In this paper we are primarily concerned with *perceived* discrimination and its consequences when discussing theoretical linkages between discrimination and health, as well as *self-reported* discrimination when discussing implications for measurement. The latter is perceived discrimination that has been formally or informally acknowledged to others (e.g., submission of a grievance at work, answering a confidential survey, or discussed with friends and family); a long line of social psychological research has explored factors that promote or inhibit reporting of discrimination (Crocker & Major, 1989).

Theoretical Considerations for the Study of Perceived Discrimination and Racial/Ethnic Health Disparities among Older Adults

Stress Process Models

Conceptual models of the relationship between stress and health posit that chronic stress generates psychological and physiological responses that accumulate over time to produce poor health outcomes. *Chronic* stressors are persistent and ongoing while *acute* stressors are those occurring relatively infrequently, such as negative life events (Cohen et al., 1998). Numerous studies have concluded that stress has a negative effect on an individual's well-being (Lazarus & Folkman, 1984; Leventhal & Nerenz, 1983; Segerstrom & Miller, 2004). The effects of chronic stressors are considered more deleterious than acute stressors because of an increased likelihood of long-term changes in physiological responses that may lead to increased disease risk (Cohen, Janicki-Deverts, & Miller, 2007; McEwen, 1998). The original stress and coping model (Lazarus & Folkman, 1984) suggests that an individual's overall level of stress and consequent psychological reactions is influenced by an interaction between an initial assessment of stressfulness (*appraisal*) and availability of resources to mitigate the stressor (*coping*). Models used to explain heath disparities such as the allostatic load (McEwen & Seeman, 1999) weathering (Geronimus, 1992), and embodiment frameworks (Krieger, 2005) consider the health effects of chronic social stressors in general while Clark and colleagues (R Clark, 2004; R. Clark, Anderson, Clark, & Williams, 1999) describe a stress-process model specific to the health effects of perceived racism (discrimination attributed to race/ethnicity). Stress process models suggest that membership in social categories such as racial/ethnic minority groups, low socioeconomic status, and old age may make individuals more likely to experience stressors such as discrimination (Dilworth-Anderson, Williams, & Gibson, 2002; Pearlin, Mullan, Semple, & Skaff, 1990; Son et al., 2007). For example, Black and American-born Hispanic adults living in Chicago had a higher prevalence of high scores across eight stress domains (including multiple types of discrimination) and greater clustering of high stress scores after controlling for socioeconomic status than Whites and foreign-born Hispanics (Sternthal et al., 2011).

The stress associated with perceived discrimination has a negative effect on physical and mental health (Pascoe & Richman, 2009; Williams & Mohammed, 2009), but the relationship is not a direct one. An individual's appraisal of the stress associated with an act or event can serve as explanatory variables within relationships between perceived discrimination and physical and mental health. Appraisals of stressful events are often stronger predictors of health outcomes than the frequency of those events (Gonyea, O'Connor, Carruth, & Boyle, 2005). Worse appraisals of stress and a low sense of control are associated with poorer health and well-being (Jang et al., 2008; Watson, Logan, & Tomar, 2008). Furthermore, social support and coping may buffer the effects of perceived discrimination. These psychosocial resources contribute greatly to group and individual differences in resilience to stressors (Clay, Roth, Wadley, & Haley, 2008; Goode, Haley, Roth, & Ford, 1998). Assistance received from an individual's support network can be conceptualized in ways ranging from the size of an individual's support network to an individual's satisfaction with the assistance that he/she is receiving. Satisfaction with social support has been shown to be related to better outcomes in older adults (Clay et al., 2008). For perceived discrimination, seeking social support can be considered a coping strategy along with approach and avoidance coping, problem-focused coping, and emotion-focused coping (Brondolo, Brady Ver Halen, Pencille, Beatty, & Contrada, 2009). Psychological stress responses to perceived racism such as anger, anxiety, and hopelessness may lead to adverse coping responses (R. Clark et al., 1999). Such responses can be cumulative, triggering a heightened and prolonged engagement of the body's "fight or flight" mechanism that results in physiologic wear and tear.

Some implications for addressing stress-process concepts in discrimination measures include the following:

- Assess *chronicity* of reported discrimination experiences. A measure that includes a count of reported discrimination experiences does not necessarily address chronicity if it is not a potentially ongoing experience over weeks, months, or years. Negative life events (e.g., being fired from a job, being stopped by a police officer) are acute stressors even if they occur more than a couple of times over a lifetime.
- Assess stressfulness of reported discrimination (*appraisal).* An individual's appraisal of its stressfulness is a critical component of the experience of discrimination and a key domain of the stress-process model that is included in some but not most existing discrimination measures (Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006). To be responsive to this model, measures should have respondents rate the stressfulness of each reported experience.
- Assess coping strategies for reported discrimination experiences. Specific coping strategies may be effective for reducing the stress associated with perceived discrimination on some dimensions, but have no effect on others. Therefore, for individuals who report perceived discrimination, it is important to assess how they dealt with the event (Brondolo, Brady Ver Halen, et al., 2009).

Life Course Models

Health research among older adults requires study of conditions that affect individuals over their entire lifespan (Dannefer, 2003; Ferraro & Shippee, 2009; Ory & Chesney, 2002), such as exposure to discrimination (N. B. Anderson, R. Bulatao, & B. Cohen, 2004; M. M. Glymour & Manly, 2008). Life course perspectives on health are ideally suited this task (Fuller-Iglesias, Smith, & Antonucci, 2010), although application to racial/ethnic health disparities research is relatively recent (S. M. Lynch, 2008). The life course perspective can be traced to Glen Elder's conceptualization of human development and aging as a product of transitions, turning points, and durations over the changing social contexts of individual lives (Elder Jr. & Johnson, 2003). The life course is comprised of multiple, interdependent *trajectories* or pathways that describe changes over time in individual experience in a specific life sphere (e.g., work, family). Aging-related experiences over the life course arise from the interaction between human agency and social structure, varying within individuals and across groups (Elder Jr. & Johnson, 2003; Settersten Jr., 2003). Theories of cumulative advantage/disadvantage and inequality describe how resources and risk exposures (negative or hazardous stimuli) build over time and are socially stratified (Dannefer, 2003; Ferraro, Shippee, & Schafer, 2009). These theories arose from Merton's ideas about the how the advantaged use their resources to accrue more advantage, known as the Matthew Effect (Merton, 1968; Rigney, 2010). Advantage reduces exposure to risks, but also provides opportunities through access to networks, resources, and prestige (Dannefer, 2003; Merton, 1968; Rigney, 2010). Disadvantage increases exposure to risk and constrains access to networks, resources, and prestige (Dannefer, 2003; Ferraro et al., 2009). An example of this process is research showing that education confers less benefit to the health of Blacks than Whites and this discrepancy in benefit widens over time (Shuey & Willson, 2008). Cumulative disadvantage or inequality thus is not only an outcome but also a process that produces inequalities across the life course (Dannefer, 2003; Ferraro & Shippee, 2009).

Public health researchers drew concepts from life course sociology and cumulative advantage/disadvantage/inequality theories to develop the field of life course epidemiology, which considers how the timing and cumulative exposure to risks and protective factors influence health outcomes across groups (Alwin & Wray, 2005; Ben-Shlomo & Kuh, 2002;

Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003; J. Lynch & Davey Smith, 2005). There is strong conceptual and empirical support for the contention that childhood conditions influence on adult outcomes including health (Ben-Shlomo & Kuh, 2002; Furumoto-Dawson, Gehlert, Sohmer, Olopade, & Sacks, 2007; M. M. Glymour & Manly, 2008; Hertzman, 2004; J. Lynch & Davey Smith, 2005). Age at migration, for example, is one life course factor that may influence the accumulation of disadvantage and increased risk for ill health among elderly Mexican migrants (de Oca, Garcia, Saenz, & Guillen, 2011). Three models describe the different (though overlapping) pathways by which exposure to risk and protective factors accumulate over time and interact to influence health (Ben-Shlomo & Kuh, 2002; Hertzman, 2004). In a latent effect (chains of risk) model, early exposures to risk and protective factors are the primary determinants of future health outcomes. The cumulative model suggests that combined, repeated exposure to risk and protective factors across the life course produces a greater effect than exposure at just one point in the life course on future health outcomes. The pathway model suggests that early experiences set individuals on a life trajectory, modifiable by intervening factors, which produce future health outcomes. Such models as originally conceptualized may not fully capture the interactive nature of the social forces that help produce racial/ethnic health disparities (Colen, 2011; M.M. Glymour, Ertel, & Berkman, 2010) but are an important starting point when exploring “developmental opportunities and vulnerabilities at each stage of the human life-course” (Hertzman, 2004) and exposures (e.g., discrimination) that cluster by social characteristics such as race/ethnicity, age, gender, and socioeconomic status (Colen, 2011; Furumoto-Dawson et al., 2007; M.M. Glymour et al., 2010; Hertzman, 2004; Hicken, Gragg, & Hu, 2011).

The life course perspective has important inferences for the study of discrimination and health among older adults. One is that the stress and other negative consequences of discrimination can be conceptualized as risks that accumulate over time. Because the lifespans of older adults are by definition long, life course models help to more fully account for the many exposures they have had that contribute to present health but that may be missed by cross-sectional assessments. Discrimination experienced in the past (e.g., ever occurred in one’s life) may have different effects on health than recently-experienced discrimination (e.g., in the past year) (Landrine & Klonoff, 1996), as is seen with distal stressors that have an effect on health independent from the influence of more proximal stressors (Ensel & Lin, 1996). Life course epidemiology also describes factors that are potentially relevant to the study of perceived discrimination and the health of older adults: (1) the location of an individual in time and the place (*context*) in which the discrimination occurred; (2) periods of rapid individual change during which exposure to discrimination may more strongly effect development and subsequent disease risk than at other times (*sensitive periods*); (3) the extent to which continued, repeated exposure to discrimination causes body systems to age and become less amenable to repair over time (*cumulative disadvantage*, a narrower construction than the original sociology definition); (4) how discrimination affects changes in health over time (*trajectories of health*); and, (5) the differing experiences of discrimination for those born at different points in history (*birth cohort effects*). Studies incorporating a life course perspective thus would explicitly address the role of time in producing the health effects of discrimination among older adults.

Some implications for addressing life course epidemiology concepts in discrimination measures include the following:

- Capture change in chronicity and stressfulness of discrimination over time (*trajectories*). Trajectories can be modeled of outcomes (e.g., health) and risk exposures (e.g., discrimination). Trajectories are affected by human agency, personal experiences or characteristics such as resiliency and coping, social

support; available resources, and social conditions (Elder Jr. & Johnson, 2003; Settersten Jr., 2003). Researchers should explore whether exposure to risk increases, decreases, or remains stable over the life course and the degree to which disadvantage is reversible (Ferraro et al., 2009). Therefore measures should ask participants to consider how their experiences of discrimination changed over time.

- Specify the time frame in which the reported discrimination occurred, with particular emphasis on early life (*sensitive periods*). Items that ask if a respondent ever had a particular experience in their lifetime do not differentiate an event that happened 50 or more years ago as a child from one that happened last week as an older adult. For example, racial/ethnic minority older adults have noted that it was not unusual for teachers to tell minorities that they did not have a bright future (Yen, Stewart, Scherzer, & Perez-Stable, 2007) and African-American women have recounted the profound cognitive and emotional impact of childhood racism experiences (Nuru-Jeter et al., 2009). Such discriminatory interactions occurring during early life may impact the way individuals perceive themselves and the world around them, and should be explicitly assessed in life course research on discrimination. Discrimination experienced during early life may impact the way individuals perceive themselves and the world around them and should be explicitly assessed.

Public Health Critical Race Praxis

Another way to study the health effects of perceived discrimination is to use the Public Health Critical Race Praxis (PHCR). PHCR is not a behavior change theory aimed at predicting causal relationships. Rather it is an anti-racism methodology that outlines strategies and provides tools for systematically and rigorously applying Critical Race Theory, which originated in the field of jurisprudence (Crenshaw, Gotanda, Peller, & Thomas, 1995), to the study of health inequities (Ford & Airhihenbuwa, 2010). There are four phases to PHCR research: (1) accurately assessing contemporary patterns of racial relations; (2) considering how racial biases may inadvertently influence the immediate project (e.g., investigators' *a priori* assumptions); (3) conceptualizing and measuring racism-related factors; and, (4) intervening on the causes of observed disparities. PHCR is rooted in social justice; therefore, research based on the praxis aims not only to reflect methodological rigor – for example, in developing meaningful measures of concepts such as discrimination, racism and race – but also to ensure that concerns of racial equity undergird the research process (Ford & Airhihenbuwa, 2010).

A key concept of PHCR is *race consciousness*. Race consciousness means to be aware of and to explicate the ways in which racism may be operating. This approach contends that is impossible to identify the root causes of racial/ethnic disparities without explicitly investigating racism's potential contributions to them. Race consciousness challenges the notion of colorblindness, which pervades the early 21st century and views racism as having minimal relevance to contemporary disparities (Bonilla-Silva, 2006; Winant, 2004). Colorblindness attributes racial disparities fundamentally to socioeconomic factors or to people's behaviors, while race consciousness emphasizes the mechanisms by which racism contributes to the disparities. PHCR studies demonstrate race consciousness in all aspects of the research process – from formulating research questions, to carrying out research in minority communities in ways that are respectful and empowering of them, to drawing on communities to interpret study findings. Therefore this approach suggests that traditional studies of racial/ethnic disparities risk conflating race effects with racism effects. That is, because race is socially constructed, differences observed between racially defined groups generally reflect inequities stemming from racism, not race or racial differences. To be

consistent with PHCR, disparities research should clearly explain the relationship linking any observed racial differences to the racism mechanisms hypothesized to generate them.

Three other PHCR concepts are particularly relevant to studies of discrimination and health among older adults: ordinariness; the need for racism measures to reflect the time-periods of interest; and intersectionality. First, racism is an ordinary and integral aspect of the social environment in racially stratified societies such as the United States. This perspective, called *ordinariness*, challenges the widely held but contestable notion that racism exposures are rare, intentional, and discrete (Bonilla-Silva, 2006). Second, as with life course models, PHCR stresses that discrimination measures appropriately reflect the ways that discrimination functions during the time of interest to the study. Overt forms of discrimination such as segregated hospitals were common prior to 1965 and, therefore, are relevant when assessing older adults' cumulative or early life experiences. Different, more subtle, forms of discrimination (e.g., not being offered the same follow up care that other patients are offered) are common today. While the same term, discrimination, may describe both of these, the underlying nature of the exposures differs. Finally, *intersectionality* posits that individuals inhabit multiple, overlapping social statuses and more than one status may be marginalized or stigmatized (e.g., black gay men). The effects of stressors on people who occupy multiple minority social categories (e.g., racial minority and sexual minority) may be worse than that expected of being a member of each category (Meyer, 2003).

Some implications for addressing PHCR concepts in discrimination measures include the following:

- **Employ *race consciousness*.** A measure that explicitly assesses racism exposures is race conscious; however, the opposite is not necessarily true. That is, just because a measure does not explicitly assess racism does not necessarily mean it is not race conscious because race consciousness may lead to some other way (i.e., other than explicitly asking about racism) of assessing racism exposures. Another implication of taking a race conscious approach is the importance of using measures that reflect how discrimination actually functions "in the real world". Historical research or policy analysis can inform the development of measures so that they meaningfully capture salient racial patterns in society. For instance, civil rights laws prohibit discrimination in hiring on the basis of race. Minorities, therefore, may be hired at comparable rates as their non-minority counterparts, but experience subtle forms of discrimination in which they are afforded few opportunities for promotion. Accordingly, measures should assess the subtle forms of discrimination (e.g., being hired but not promoted on the job) that more accurately capture the ways that discrimination is likely to operate currently.
- **Address *ordinariness* of racism.** Discrimination measures that operationalize racism exposures as ubiquitous, chronic, everyday stressors (e.g., being followed while shopping because of race) reflect this ordinariness concept.
- **Assess *intersectionality*.** Measures that attribute unfair treatment to only one basis (e.g., race) may not account for the interlocking ways that other social categories (e.g., gender, immigrant status) compound the perceptions and experiences of discrimination. For example, unfair treatment attributed to language and perceived immigrant status is of particular relevance to Latinos (Perez, Fortuna, & Alegria, 2008) and Asian/Pacific Islanders (Gee, Ro, Shariff-Marco, & Chae, 2009). It may be difficult to determine the extent to which perceptions and exposures to discrimination related to language use are distinct from those tied to perceived immigrant status or race/ethnicity.

- Operationalize discrimination measures so that they are specific to the time period(s) of interest to the study. For older adults, both overt and subtle discrimination should be assessed as their lives encompass historical periods when one or the other was more prevalent. As with the life course perspective, operationalizing discrimination measures so that they are appropriate for and specific to the time period(s) of interest is necessary to understand the underlying mechanisms by which discrimination contributes to disparities.
- Understand differences between racial/ethnic minority groups in their experiences of discrimination compared to universality of discrimination experiences. PHCR urges researchers to be cautious when choosing between group-specific discrimination measures or measures designed to be used across diverse groups. Some forms of discrimination operate across groups (e.g., exclusion of group members) but others are group-specific (e.g., the process by which the systematic exclusion occurs), reflecting each group's unique histories and circumstances. For example, Asians are more likely to be stereotyped as immigrants and African Americans more likely to be stereotyped as criminals. While both groups share the experience of being stereotyped, the implications may differ depending on the stereotype. Differences and similarities in the way discrimination operates across groups may also influence responses to race-specific items. For example, describing the phenomenon as racial/ethnic discrimination rather than unfair treatment attributed to race/ethnicity can affect the prevalence of self-reported discrimination, which participants report discrimination, and the relationship with health outcomes (Bastos et al., 2010; Brown, 2001; Shariff-Marco et al., 2011; Williams & Mohammed, 2009).

Using Theory to Select and Modify Measures of Perceived Discrimination

In this section we describe how four well-known discrimination measures – the Everyday Discrimination Scale, Experiences of Discrimination Scale, Schedule of Racist Events, and Index of Race-Related Stress – compare across selected concepts from stress process, life course, and Public Health Critical Race frameworks (Table 1). These measures were chosen because of differences in how they address selected concepts: *chronicity*, *appraisal*, and *coping* for stress-process models; *trajectories* and *sensitive periods* for life course models; *ordinariness* and *intersectionality* for studies employing Public Health Critical Race praxis. Conceptual gaps offer opportunities for researchers, if desired, to modify existing perceived discrimination measures by incorporating new items that address missing dimensions or changing items to refocus content. Although researchers do not need to consider all issues for every study, it is important to identify those most relevant to their own research questions.

Everyday Discrimination Scale

One of the most commonly used measures in public health research on perceived discrimination and health is the Everyday Discrimination Scale (Williams et al., 1997), which assesses "chronic, routine, and relatively minor experiences of unfair treatment." The measure asks respondents the basis to which they attribute the unfair treatment (e.g., race/ethnicity, gender, socioeconomic status). The Everyday Discrimination Scale was designed for use across racial/ethnic groups. It was originally tested with primarily African American and White samples, but has demonstrated good internal consistency in other racial/ethnic groups (Gee, Ryan, Laflamme, & Holt, 2006; Gee, Spencer, Chen, & Takeuchi, 2007; Perez et al., 2008). An example of its use in aging research is a study that found that reports of everyday discrimination were associated with elevated diastolic blood pressure among

African Americans but not Caucasians (Lewis, Barnes, Bienias, Lackland, Evans, & Mendes de Leon, 2009).

Stress-process models—The Everyday Discrimination Scale was specifically designed to assess *chronic* instances of unfair treatment, experiences that occur consistently over time. A key limitation to using this measure with stress-process models, however, is that there are no items to *appraise* the stressfulness of the chronic experiences. Thus, a potential modification would include such rating for each reported unfair treatment, e.g., "how stressful is this experience to you in general?" on a scale of 0 – 3 with 0 being "not at all stressful" and 3 being "very stressful." Finally, the full version of the measure includes items addressing the strategies used to *cope* with discrimination.

Life course models—Everyday Discrimination Scale items have no specific timeframe associated with them, as respondents are asked if any of the chronic events "ever" happened to them. For application in life course studies of discrimination, a potential modification would be to address changes over time in the experiences of discrimination, i.e., *trajectories* of perceived discrimination. The Jackson Heart Study Discrimination Instrument (Sims, Wyatt, Gutierrez, Taylor, & Williams, 2009), partly based on the Everyday Discrimination Scale, includes an item comparing the frequency of unfair treatment from early life to present time. Another possible modification would be to frame each experience during a specific time period (e.g., childhood up to age 18, past year). This could help pinpoint *sensitive periods*.

Public Health Critical Race praxis (PHCR)—The ubiquity and chronicity of everyday racism that undergirds the PHCR concept of *ordinariness* (Delgado & Stefancic, 2001) is reflected in the EDS. Because of the option to choose multiple options for attribution, the measure could be used to explore *intersectionality* as intersecting effects of discrimination due to co-occurring social categories. The PHCR approach views racism as operating differently across groups and so a potential modification would be adding follow-up questions to obtain additional information about the nature of discrimination exposures and whether subtle differences exist across groups.

Experiences of Discrimination Scale

The Experiences of Discrimination Scale (Krieger & Sidney, 1996) was one of the first measures developed specifically for public health research and demonstrates psychometric equivalence across racial/ethnic groups (Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005). Like the Everyday Discrimination Scale, the Experiences of Discrimination Scale was designed for use with racially diverse samples. The attribution for each experience is set at "race, ethnicity, or color" with no other options. An example of its use in aging research is a study that found that that perceived discrimination was associated with more patient-reported problems with care among African American and White military veterans with diabetes (L. R. Hausmann et al., 2010).

Stress-Process Models—The items describe experiences in a variety of settings that are acute and chronic; adding more of the latter would strengthen its application to the *chronicity* concept. The measure does not include any way to *appraise* the stressfulness of each reported experience but does ask how participants generally *cope* with unfair treatment.

Life course models—A limitation of the Experiences of Discrimination Scale for life course research is that no specific time frame is provided for reports of discrimination. Adding items that assess changes over time in the experiences of discrimination would address the concept of *trajectories*. However, the measure does address *sensitive periods* to

some extent through two questions about how worried participants were about racial discrimination as a child (up to 18 years old) and is thus one of the few perceived discrimination measures to address early childhood experiences. A measure by Parker-Dominguez and colleagues (Dominguez, Dunkel-Schetter, Glynn, Hobel, & Sandman, 2008) loosely based on Experiences of Discrimination, addressed lifetime exposure to discrimination with items referring to specific periods of the life course to aid recall (as a child aged 16 and younger, and as an adult aged 16 and older).

Public Health Critical Race praxis (PHCR)—The EODS encompasses routine forms of racism and thus reflects the *ordinariness* concept of PHCR. Offering other options for attribution in addition to race/ethnicity could help address *intersectionality*. While the experiences of discrimination are specifically attributed to race, PHCR suggests racism does not operate similarly across groups so researchers using EODS should carefully interpret findings as they apply to specific groups. Follow-up questions could be used to obtain additional information about the nature of discrimination exposures and whether subtle differences exist across groups.

Schedule of Racist Events

The Schedule of Racist Events (Landrine & Klonoff, 1996) was specifically designed for African Americans and items attribute the reported experiences to respondents' Blackness. The measure assesses the frequency with which African-Americans encountered racial discrimination in the past year and over their lifetimes as well as the stress associated with any reported events. The General Ethnic Discrimination Scale (Landrine et al., 2006) is a modified version that changed the attribution for each experience from "because you are Black" to "because of your race/ethnicity." An example of the use of the Schedule of Racist Events in aging research is a study that found that greater perceived racism was associated with depression among older African Americans with diabetes (Wagner & Abbott, 2007).

Stress-process models—The Schedule of Racist Events was specifically conceptualized within the stress-coping framework (Landrine et al., 2006). The items describe experiences that are both chronic and acute; dropping some of the former or adding more of the latter would strengthen its application to the *chronicity* concept. Respondents who report ever having an experience are asked to note its frequency and *appraise* its stressfulness. The measure does not include items on the *coping* strategies of respondents to experiences of racism.

Life course models—Adding items that assess changes over time in the experiences of discrimination would address the concept of *trajectories*. Because the Schedule of Racist Events asks whether an experience ever happened as well as if it happened within the past year, a potential modification for its use in life course research would be to incorporate assessment of experiences within specific time periods (e.g., childhood up to age 18) to address *sensitive periods*.

Public Health Critical Race praxis (PHCR)—Both the Schedule of Racist Events and the General Ethnic Discrimination Scale reflect the PHCR concept of ordinariness by assessing routine forms of racism. According to PHCR, however, racism does not operate in the exact same way across all racially or ethnically defined groups so investigators must carefully interpret findings as they apply to specific groups when using the General Ethnic Discrimination Scale. Follow-up questions to obtain additional information about the nature of discrimination exposures and whether subtle differences exist across groups. *Intersectionality* could be addressed by adding multiple options ("choose all that apply") in addition to race/ethnicity for attributions for perceived discrimination.

Index of Race-Related Stress

The Index of Race-Related Stress (Utsey, 1999; Utsey & Ponterotto, 1996) assesses stress experienced by African-Americans in daily encounters. It was developed with the idea that experiences of racism by African Americans are "cumulative, whereby new encounters are interpreted on the basis of past experiences with racism, knowledge of others' experience with racism, and knowledge about the systemic nature of racism" (Utsey & Ponterotto, 1996, p. 490).The measure has sub-scales on Cultural Racism, Institutional Racism, Individual Racism, and Collective Racism. An example of its use in aging research is a study that found that institutional racism-related stress was associated with self-reported psychological health among older African Americans (Utsey, Payne, Jackson, & Jones, 2002).

Stress-process models—The Index of Race-Related Stress was specifically developed within the stress-process coping framework (Utsey & Ponterotto, 1996) and incorporates both acute and chronic experiences; dropping some of the former or adding more of the latter would strengthen its application to the *chronicity* concept. Respondents are asked to *appraise* the stressfulness of each experience but not about *coping* strategies.

Life course models—A limitation of the Index of Race-Related Stress for life course research is that no specific time frame is provided for reports of discrimination. Adding items that assess changes over time in the experiences of discrimination would address the concept of *trajectories*. A potential modification would be to frame each experience during a specific time period (e.g., childhood up to age 18, past year) to assess *sensitive periods* when experiences of discrimination may have had a particularly strong impact.

Public Health Critical Race praxis (PHCR)—The Index of Race-Related Stress focuses on the daily microaggressions of racism and thus reflects the concept of *ordinariness*. The measure is specific to African Americans, which addresses the PHCR claim that racism to operate differently across racial/ethnic groups. *Intersectionality* could be addressed by adding multiple options ("choose all that apply") in addition to race/ethnicity for attributions for perceived discrimination.

Discussion

Existing discrimination measures have significantly contributed to our understanding of the determinants of racial/ethnic health disparities. The four measures reviewed in this article have been used successfully in disparities research among older adults, and two have been validated in community-dwelling samples of older adults – Everyday Discrimination Scale (Taylor et al., 2004) and Index of Race-Related Stress (Utsey et al., 2002). These measures also incorporate (to varying degrees) features that enable them to use concepts from theoretical approaches relevant to research on the health effects of discrimination.

However, no discrimination measure has yet been specifically developed with an aging perspective that addresses older adults' unique developmental and social circumstances. We recommend that aging researchers use cognitive interview pretesting (Napoles-Springer, Santoyo-Olsson, O'Brien, & Stewart, 2006) and other pretesting methods with their selected discrimination measure(s) – whether modified or unmodified – to ensure that the items are understandable but more importantly applicable to the older adults in their study. Moody-Ayers and colleagues, for example, modified the Perceived Racism Scale to eliminate items identified in pretesting as not relevant to the older African Americans with Type 2 diabetes in their study (Moody-Ayers, Stewart, Covinsky, & Inouye, 2005). Although we have suggested examples of modifications that address some conceptual gaps related to the stress-

process, life course, and Public Health Critical Race praxis frameworks, some changes could alter – sometimes radically – the measure developers' original purpose; see Stewart and colleagues in this issue for a full discussion on modifying measures for diverse populations. The ideal solution, of course, would be to develop discrimination measures specifically designed and validated for use in health disparities research among diverse older adults.

Conclusion

Advancing research on the health effects of perceived discrimination in older adults will require thoughtful consideration of the measurement implications of theoretical frameworks relevant to the study of racial/ethnic health disparities. Researchers have a wide variety of perceived discrimination measures from which to choose, and employing the perspective of stress-process, life course, and/or the Public Health Critical Race praxis frameworks may assist in the selection of the most appropriate measure for their study. While we highlighted these particular frameworks, the process of evaluating the conceptual appropriateness of a specific measure described in this paper can be used with any theory. Such considerations will help us to better understand how discrimination experienced over a lifetime contributes to racial/ethnic health disparities among older adults.

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Table 1

Integration of Selected Theoretical Concepts within Four Discrimination Measures used in Racial/Ethnic Health Disparities Research

		Everyday Discrimination Scale	Experiences of Discrimination	Schedule of Racist Events	Index of Race-Related Stress
Stress-process model	*Chronicity:* was the experience routine and ongoing?	•			•
	Appraisal: how stressful was the discrimination?			•	•
	Coping: how do individuals deal with discrimination?	•	•		•
Lifecourse	*Trajectories:* how do experiences of discrimination change over time?				
	Sensitive Periods: how is discrimination experienced at different times (e.g., childhood)?		•		
Public Health Critical Race praxis	*Ordinariness:* is discrimination conceptualized as routine?	•	•	•	•
	Intersectionality: are multiple social statuses addressed?			•	•