

# Cumulative Effect of Racial Discrimination on the Mental Health of Ethnic Minorities in the United Kingdom

Stephanie Wallace, PhD, James Nazroo, PhD, and Laia Bécáres, PhD

**Objectives.** To examine the longitudinal association between cumulative exposure to racial discrimination and changes in the mental health of ethnic minority people.

**Methods.** We used data from 4 waves (2009–2013) of the UK Household Longitudinal Study, a longitudinal household panel survey of approximately 40 000 households, including an ethnic minority boost sample of approximately 4000 households.

**Results.** Ethnic minority people who reported exposure to racial discrimination at 1 time point had 12-Item Short Form Health Survey (SF-12) mental component scores 1.93 (95% confidence interval [CI] = -3.31, -0.56) points lower than did those who reported no exposure to racial discrimination, whereas those who had been exposed to 2 or more domains of racial discrimination, at 2 different time points, had SF-12 mental component scores 8.26 (95% CI = -13.33, -3.18) points lower than did those who reported no experiences of racial discrimination. Controlling for racial discrimination and other socioeconomic factors reduced ethnic inequalities in mental health.

**Conclusions.** Cumulative exposure to racial discrimination has incremental negative long-term effects on the mental health of ethnic minority people in the United Kingdom. Studies that examine exposure to racial discrimination at 1 point in time may underestimate the contribution of racism to poor health. (*Am J Public Health.* 2016;106:1294–1300. doi:10.2105/AJPH.2016.303121)

Racism is a system of structuring opportunity and assigning values to people and groups based on phenotypic properties that unfairly disadvantages some individuals and communities, while unfairly advantaging others.<sup>1</sup> International evidence now documents that experiencing racism, either institutionally, internalized, or personally mediated, is associated with poor health.<sup>2–7</sup> Although the large majority of the literature is from cross-sectional studies, increasing longitudinal evidence now indicates that experiences of racial discrimination predate poor health,<sup>8–16</sup> that changes in racial discrimination are associated with changes in mental health,<sup>17</sup> and that chronic exposure to everyday racial discrimination is associated with poor sleep, coronary artery calcification,<sup>18,19</sup> and altered diurnal cortisol patterns and higher cortisol awakening response.<sup>20</sup>

Despite these novel insights on the longitudinal association between racial

discrimination and health, there is a gap in our understanding of how the accumulation of exposure to racial discrimination over time is associated with increased morbidity. Some cross-sectional studies have shown that the accumulation of exposure to racial discrimination across domains (e.g., at work, in educational settings, while seeking health care) leads to a dose–response association between racial discrimination and poor health.<sup>21–25</sup> However, to date, studies have modeled experiences of racial discrimination as episodic exposures, in which racial discrimination is assumed to occur at 1 point in time, and most often within a particular domain.<sup>26</sup>

Experiencing racial discrimination likely has cumulative effects on health and therefore should be conceptualized as a dynamic process that operates across time, across domains, and even across generations.<sup>26</sup> Studies that capture exposure to racial discrimination at 1 point in time, and assess domains in isolation, are likely to underestimate the overall burden of racial discrimination on the health of individuals and its contribution to ethnic inequalities in health.<sup>27</sup>

This study addressed these limitations by examining the longitudinal association between cumulative exposure to racial discrimination, over time and across domains, and the mental health of ethnic minority people, and assessed its contribution to ethnic inequalities in mental health in the United Kingdom.

The setting of this study was the United Kingdom, where ethnic inequalities in health have been consistently documented. For example, Black Caribbean, Pakistani, and Bangladeshi people have between 6 and 9 fewer years of disability-free life expectancy at birth than do the White British group<sup>28</sup> and are up to twice as likely as White British people to report poor self-rated health and to have a limiting long-standing illness.<sup>29</sup> Experiences of racial discrimination appear to be a key contributor to ethnic inequalities in health in the United Kingdom, the United States, and elsewhere,<sup>2,4,7,30,31</sup> but given data limitations, studies to date have not been able to fully examine longitudinal effects and whether, and how, cumulative exposure to racial discrimination leads to ethnic inequalities in health.

## ABOUT THE AUTHORS

All of the authors are with Centre on Dynamics of Ethnicity, University of Manchester, Manchester, Lancashire, UK.

Correspondence should be sent to Laia Bécáres, PhD, University of Manchester, Humanities Bridgeford Street Building 2.13P, M13 9PL, UK (e-mail: laia.becares@manchester.ac.uk). Reprints can be ordered at <http://www.ajph.org> by clicking the “Reprints” link.

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## METHODS

This study used data from 4 waves of the UK Household Longitudinal Study (UKHLS), a longitudinal household panel survey of approximately 40 000 households, including an ethnic minority boost sample of approximately 4000 households. The nationally representative annual survey provided longitudinal data on factors such as health, education, income, and social life.<sup>32</sup> For each wave, responses were collected over a 24-month period, conducted face-to-face via computer-aided personal interview. The first wave of the survey was carried out in 2009 to 2010, with subsequent waves collected in 2010 to 2011, 2011 to 2012, and 2012 to 2013.

The survey had multiple components: a representative general population sample, a general population comparison sample, an ethnic minority boost sample, and participants from the British Household Panel Survey from wave 2 onward. All ethnic minority respondents and the general population comparison sample completed, in addition to the general adult questionnaire, an extra 5 minutes of questions covering topics such as ethnic identity, migration histories, religious behavior, harassment, and employment discrimination. Further information on the UKHLS has been reported elsewhere.<sup>33</sup>

### Mental Health

We measured mental health with the 12-Item Short Form Health Survey (SF-12) Mental Component Summary (MCS),<sup>34</sup> a measure of nonspecific psychological distress that consists of 12 questions relating to the respondent's self-reported general health, health limitations, emotional problems, pain, and feelings of depression and how they interfere with social activities. We used an algorithm to convert these items into a single mental functioning score ranging from 0 (low functioning) to 100 (high functioning), with higher values indicating better mental health. The MCS uses norm-based scoring to have a mean of 50 and an SD of 10 (see Ware et al.<sup>35</sup> for complete scoring details).

### Racial Discrimination

Within the extra 5 minutes of questions, the UKHLS included 5 questions relating to

harassment and discrimination every 2 years, beginning in wave 1 and repeated in wave 3. These 4 questions asked respondents whether in the last 12 months they (1) had felt unsafe; (2) had avoided going to or being in several locations; (3) had been insulted, called names, threatened, or shouted at; or (4) had been physically attacked. For each domain of racial discrimination, several locations were listed for each of the questions, such as at school, at college, at work, on public transport, outside, in a public place, or at home. Respondents were asked to choose all that apply. The UKHLS adopts a 2-stage approach, whereby after responding positively to any of these items, respondents are asked the reasons that these incidents occurred. Possible attributions included their sex, age, ethnicity, sexual orientation, health or disability, nationality, religion, language or accent, or dress or appearance. We recoded these variables to indicate whether the respondent had experienced feeling unsafe, avoided a space or place, been assaulted, or been insulted because of racial discrimination based on his or her ethnicity, nationality, or religion. Because of the small number of respondents who stated that they had been physically assaulted, we combined this measure with the indicator of verbal insults.

The UKHLS also asked about discrimination in the workplace within the last 12 months for those respondents who were employed during this time. Three questions asked whether the respondent had been turned down for a job, turned down for a promotion, or turned down for job-related training. The same 2-step approach was used, in which the second part of the question asked respondents the reasons that they were turned down. As with the measures of interpersonal racial discrimination, we grouped together the potential attributions of ethnicity, nationality, or religion. Because of the small number of respondents stating that they had experienced racial discrimination in the workplace within the last year, we combined these questions into a single binary variable indicating any employment discrimination.

We created 2 cross-sectional summary variables of exposure to racial discrimination. These variables were binary and identified whether the respondent had experienced any

form of racial discrimination at wave 1 and wave 3.

To measure cumulative experiences of racial discrimination over time, we created a longitudinal summary variable that indicated whether the respondent reported any racial discrimination (being physically or verbally insulted, feeling unsafe, avoiding a space or place, or facing employment discrimination) at 1 time point or at 2 time points. Categories included no experiences of racial discrimination; experiences of racial discrimination at 1 time point (wave 1 or wave 3); and experiences of racial discrimination at 2 time points (wave 1 and wave 3). We also created a summary variable that combined cumulative exposure to different domains of racial discrimination across time. This dose-response variable was summarized into 6 categories:

1. No experiences of racial discrimination,
2. Exposure to 1 domain of racial discrimination at 1 time point (wave 1 or wave 3),
3. Exposure to 2 or more domains of racial discrimination at 1 time point,
4. Exposure to 1 domain of racial discrimination at 2 time points (wave 1 and wave 3),
5. Exposure to 2 or more domains of racial discrimination at 1 time point and 1 exposure to racial discrimination at a second time point,
6. Exposure to 2 or more domains of racial discrimination at 2 time points.

### Covariates

We measured ethnicity with a self-reported variable based on the 2011 Census categories for England and Wales. Respondents were asked to select 1 of the 18 categories that best described their ethnic group. We have reported on the ethnic minority groups with sufficiently large samples: Indian, Pakistani, Bangladeshi, Black Caribbean, and Black African. We compared these groups with the White British group.

We considered factors thought to be associated with both experiences of racial discrimination and mental health in analytical models. These included sex, age (continuous), and equivalized household income (continuous) at wave 1. Equivalized income, a measure of socioeconomic position, was conceptualized and modeled in this study as

a consequence of the discriminatory practices experienced by ethnic minority people in a range of domains, including education, residential history, and employment. Equivalized household income was calculated as the sum of the gross monthly household income divided by the modified Organisation for Economic Co-operation and Development scale. A small number of respondents ( $n = 70$ ) recorded a negative income value, and thus these were recoded to 0 rather than excluding them from the sample.

### Analysis Plan

To examine the burden of experiencing racial discrimination on the mental health of ethnic minority people and to explore the longitudinal associations between cumulative exposure to racial discrimination and mental health, we fitted a series of multiple linear regression models. The first set of linear regression models examined the association between the different measures of racial discrimination and mental health at wave 4. Within each of these models, we controlled for MCS scores at wave 1, while adjusting for age, sex, and equivalized household income.

For the analyses that aimed to model the contribution of racism to the risk of mental illness for ethnic minority people, compared with ethnic majority people, we built 2 linear regression models, one using cross-sectional data and the other using longitudinal data, reflecting different approaches to modeling the extent of ethnic inequality. The cross-sectional model provided a more comprehensive account of the association between the markers of social and economic inequality and ethnic inequalities in mental health, because it described their potential contribution to ethnic differences as observed in the population. However, because it was cross-sectional, it may have contained some element of reverse causation (e.g., mental illness leading to lower incomes) and hence overestimated causal effects. The longitudinal model was a stricter test of causal effects, but because it modeled change over 4 waves of data, it did not account for causal effects that would have occurred before the initial observation period.

We built both linear regression models in a stepwise manner. We first compared each

ethnic minority group with the White British group (the reference category), adjusted for sex and age differences across ethnic groups (step 1). Then, we included 2 individual markers of social and economic inequality that could be considered to be a consequence of living in a context where identities are racialized. As the first marker, we used equivalized household income, our measure of socioeconomic position (step 2). As the second marker, we used reports of their exposure to racial discrimination (step 3). The final step (step 4) included both equivalized household income and experiences of racial discrimination.

All models were fitted in Stata version 13<sup>36</sup> and included the appropriate cross-sectional and longitudinal weights to account for the stratified sample and nonresponse.<sup>32</sup>

### RESULTS

Levels of psychological distress were similar for the White British (mean = 49.6; SE = 0.89) and Indian groups (mean = 49.4; SE = 0.51). The Black African group (mean = 50.9; SE = 0.57) had significantly lower levels of distress than did the White British group, whereas the Pakistani (mean = 45.9; SE = 0.78), Bangladeshi (mean = 46.5; SE = 1.54), and Black Caribbean groups (mean = 48.3; SE = 0.60) all had significantly higher levels of distress than did the White British group.

Table 1 shows the prevalence of racial harassment and discrimination experienced by ethnic minority groups at waves 1 and 3. All ethnic minority groups reported higher levels of racial discrimination at wave 3 compared with those reported at wave 1: more than one third of the Bangladeshi group (35%) and more than a quarter of the Indian (28%), Pakistani, (27%), and Black African (26%) groups reported that they had experienced some form of racial discrimination at wave 3, compared with about 1 in 5 in wave 1. Table 1 also shows the prevalence of cumulative exposure to racial discrimination over time and across domains at wave 4. The Bangladeshi group consistently reported the highest cumulative exposure to racial discrimination across all of the domains of racial discrimination, whereas the Black Caribbean group reported the least exposure.

Table 2 shows the effects of racial discrimination on mental health. Compared with respondents who reported no experiences of racial discrimination, respondents who reported exposure to any domain of racial discrimination at 1 time point (either at wave 1 or at wave 3) had a deterioration in mental health scores (MCS) at wave 4 by 2.27 (95% confidence interval [CI] = -3.42, -1.12) points. Exposure to racial discrimination at both time points reduced MCS scores by 5.78 (95% CI = -8.47, -3.10) points. Those who reported that they had previously been insulted or attacked at 1 time point (either at wave 1 or at wave 3) had MCS scores 3.38 (95% CI = -5.10, -1.67) points lower, and those who reported exposure to racial insults or attacks at both wave 1 and wave 3 had MCS scores 5.03 (95% CI = -8.36, -1.69) points lower than did those who reported that they had not been insulted or attacked because of their ethnicity, nationality, or religion. Similar associations were found for those who reported that they had felt unsafe and those who reported that they avoided places.

The final section in Table 2 shows the dose-response effects over time and across domains. Respondents who reported exposure to 1 domain of racial discrimination at 1 time point had MCS scores 1.93 (95% CI = -3.31, -0.56) points lower, and respondents who reported exposure to 2 domains of racial discrimination at 1 time point had MCS scores 2.98 (95% CI = -4.57, -1.33) points lower than did those who reported no exposure to racial discrimination. Respondents who reported exposure to 2 domains of racial discrimination at 1 time point and further exposure at a second time point had MCS scores 5.65 (95% CI = -8.90, -2.40) points lower than did those who reported no exposure to racial discrimination. Finally, those who reported 2 or more domains of racial discrimination at 2 time points had MCS scores 8.26 (95% CI = -13.33, -3.18) points lower than did those who reported no exposure to racial discrimination.

Table 3 shows cross-sectional differences in mental health scores for each ethnic minority group, compared with the White British group. Adjusting for age and sex in step 1 shows the significantly lower levels of average mental health scores for Pakistani, Bangladeshi, and Black Caribbean people,

**TABLE 1—Prevalence of Racial Discrimination Among Ethnic Minority Groups at Waves 1, 3, and 4: UK Household Longitudinal Study, 2009–2013**

	Indian, Weighted % or No.	Pakistani, Weighted % or No.	Bangladeshi, Weighted % or No.	Black Caribbean, Weighted % or No.	Black African, Weighted % or No.
<b>Wave 1</b>					
Any domain of racial discrimination	20.5	17.5	21.9	14.1	22.4
Verbally or physically assaulted	9.4	8.6	16.7	9.7	14.4
Felt unsafe	15.3	13.3	17.0	5.9	12.4
Avoided places	6.4	5.8	9.9	2.1	5.6
Job discrimination	1.1	0.4	0.3	2.5	2.6
<b>Wave 3</b>					
Any domain of racial discrimination	27.6	27.2	35.1	14.4	26.0
Verbally or physically assaulted	11.2	10.7	10.6	4.8	12.3
Felt unsafe	21.0	20.1	26.1	8.3	16.1
Avoided places	13.3	15.0	21.9	5.4	11.9
Job discrimination	1.1	0.9	1.3	1.2	1.8
<b>Wave 4</b>					
Any domain of racial discrimination					
No exposure	62.5	61.3	58.1	76.3	60.8
1 event at 1 time point	26.9	32.7	26.7	19.1	29.9
2 events at 2 separate time points	10.6	6.0	15.2	4.6	9.3
Verbally or physically assaulted					
No exposure	82.5	83.4	76.8	86.5	76.4
1 event at 1 time point	14.4	14.0	19.2	12.5	20.5
2 events at 2 separate time points	3.1	2.7	4.1	1.0	3.1
Felt unsafe					
No exposure	70.7	70.7	68.1	86.9	76.0
1 event at 1 time point	22.4	25.2	20.7	12.1	19.4
2 events at 2 separate time points	6.9	4.1	11.2	1.1	4.6
Avoided places					
No exposure	83.8	81.1	75.3	93.4	83.4
1 event at 1 time point	12.8	17.0	17.5	5.7	15.6
2 events at 2 separate time points	3.5	1.9	7.2	0.9	1.0
Dose-response					
No exposure	62.5	61.3	58.1	76.3	60.8
1 event at 1 time point	16.3	17.1	12.2	14.9	18.6
≥ 2 events at 1 time point	10.6	15.6	14.5	4.2	11.3
1 event at 2 time points	2.4	0.6	4.0	1.2	1.8
≥ 2 events at 1 time point and 1 event at another time point	3.7	2.9	0.9	2.9	3.6
≥ 2 events at 2 time points	4.5	2.6	10.2	0.6	3.8
Unweighted base	846	627	417	502	510
Weighted base	508	398	294	354	329

compared with White British people. Additionally adjusting for income differences in step 2 reduced the coefficients for the Pakistani, Bangladeshi, and Black Caribbean groups substantially and to nonsignificance

for Pakistani and Bangladeshi people. Step 3 adjusted for exposure to racism and discrimination and similarly reduced the negative coefficients for these 3 ethnic minority groups, although a significant disadvantage

remained for each of them. The final model (step 4) adjusted simultaneously for both income differences and racism, and in this model, substantial reductions occurred in the negative coefficients for the Pakistani,

Bangladeshi, and Black Caribbean groups. For the Pakistani and Bangladeshi groups, associations became nonsignificant, and for the Indian group, we saw a substantial increase in the positive coefficients. For the Black African group, results showed a mental health advantage, as compared with the White British group, once their economic and racism disadvantages were controlled for.

Table 4 presents findings from the model predicting longitudinal change in mental health scores. Results showed that whereas change over time in mental health among Black Caribbean, Indian, and Bangladeshi people did not differ from that of White British people, inequalities in mental health became greater over time for the Pakistani group, whose SF-12 scores decreased by 3.20 points (95% CI = -4.48, -1.93) relative to the White British group. After adjusting for socioeconomic disadvantage (step 2), the increase in poor mental health for Pakistani people,

compared with White British people, was reduced, and this inequality attenuated even further after additionally adjusting for experiences of racial discrimination, although it remained statistically significant. For the Black African population, we saw an improvement in mental health over time, compared with the White British group, and this association strengthened as we adjusted for socioeconomic disadvantage and experiences of racial discrimination (see steps 2–4).

### DISCUSSION

In this study, we set out to explore whether, and how, cumulative exposure to racial discrimination over time was associated with the mental health of ethnic minority people in the United Kingdom. In a novel contribution to the literature, we have documented the corrosive effect that the cumulative experience of racial

discrimination has on the mental health of ethnic minority people. We found a cumulative, dose-response relation between experiences of racial discrimination and the mental health of ethnic minority people, so that ethnic minority people who reported repeated occurrences of racial discrimination, over time and across domains, had a reduction of 8 points in their MCS scores, compared with their peers who did not report any experiences of racial discrimination. Fear of racial discrimination expressed through reporting feeling unsafe or avoiding spaces or places had the biggest cumulative effect on the mental health of ethnic minority people. This finding would suggest that previous exposure to racial discrimination over the life course, or awareness of racial discrimination experienced by others, can continue to affect the mental health of ethnic minority people, even after the initial exposure to racial discrimination. Other UK-based studies also have reported the increased harm of fear of experiencing racial discrimination on health,<sup>7,30</sup> which likely captures not only the previous experiences of racial discrimination as described earlier but also the vigilance and anticipatory stress of a possible future racist encounter.

In the second part of the study, we assessed the contribution of racial discrimination to ethnic inequalities in mental health. We did this by modeling 2 different dimensions of racial disadvantage that lead to poor health: the direct experiences of racism on physiological changes<sup>37</sup> and the social and economic consequences of living in a racialized society.<sup>38</sup> We found that in the cross-sectional analyses, adjusting for socioeconomic disadvantage and experiences of racial discrimination eliminated ethnic inequalities in mental health for Pakistani and Bangladeshi people and reduced inequalities for Black Caribbean people. Findings from the longitudinal analyses showed that controlling for socioeconomic disadvantage and experiences of racial discrimination attenuated inequalities in mental health for Pakistani people, as compared with White British people.

Even though we analyzed longitudinal data and accounted for cumulative exposure to racial discrimination over time, and across domains, we assessed only experiences of racial discrimination that participants had experienced when they were sampled by the UKHLS, and thus we were not able to assess their

**TABLE 2—Longitudinal Association Between Accumulation of Reported Racial Discrimination Experienced at Waves 1 and 3 and Psychological Distress (SF-12 Scores) at Wave 4 Among Ethnic Minority People: UK Household Longitudinal Study, 2009–2013**

	b (95% CI)
<b>Any domain of racial discrimination</b>	
No exposure (Ref)	1
1 event at 1 time point	-2.27 (-3.42, -1.12)
2 events at 2 separate time points	-5.78 (-8.47, -3.10)
<b>Verbally or physically assaulted</b>	
No exposure (Ref)	1
1 event at 1 time point	-3.38 (-5.10, -1.67)
2 events at 2 separate time points	-5.03 (-8.36, -1.69)
<b>Felt unsafe</b>	
No exposure (Ref)	1
1 event at 1 time point	-3.11 (-4.52, -1.69)
2 events at 2 separate time points	-6.36 (-10.08, -2.65)
<b>Avoided places</b>	
No exposure (Ref)	1
1 event at 1 time point	-2.15 (-3.62, -0.67)
2 events at 2 separate time points	-8.15 (-15.50, 0.08)
<b>Dose-response</b>	
No exposure (Ref)	1
1 event at 1 time point	-1.93 (-3.31, -0.56)
≥2 events at 1 time point	-2.98 (-4.57, -1.33)
1 event at 2 time points	-1.87 (-4.90, 1.15)
≥2 events at 1 time point and 1 event at another time point	-5.65 (-8.90, -2.40)
≥2 events at 2 time points	-8.26 (-13.33, -3.18)

Note. CI = confidence interval; SF-12 = 12-Item Short Form Health Survey.

**TABLE 3—Ethnic Inequalities in the Cross-Sectional Association Between Experiences of Racial Discrimination and Psychological Distress (SF-12 Scores): UK Household Longitudinal Study, 2009–2013**

	Step 1, b (95% CI)	Step 2, b (95% CI)	Step 3, b (95% CI)	Step 4, b (95% CI)
White British (Ref)	1	1	1	1
Indian	0.08 (−0.52, 0.69)	0.10 (−0.49, 0.70)	0.37 (−0.22, 0.96)	0.39 (−0.19, 0.97)
Pakistani	−1.04 (−1.76, −0.31)	−0.59 (−1.31, 0.14)	−0.77 (−1.50, −0.05)	−0.33 (−1.05, 0.39)
Bangladeshi	−1.22 (−2.11, 0.32)	−0.79 (−1.69, 0.11)	−0.95 (−1.85, −0.05)	−0.52 (−1.43, 0.38)
Black Caribbean	−1.08 (−1.73, −0.43)	−0.94 (−1.59, −0.29)	−0.84 (−1.50, −0.19)	−0.71 (−1.36, −0.51)
Black African	0.27 (−0.41, 0.96)	0.59 (−0.09, 1.28)	0.54 (−0.14, 1.23)	0.86 (0.19, 1.54)
Constant	50.51 (50.20, 50.83)	49.18 (48.81, 49.55)	50.52 (50.20, 50.83)	49.18 (48.81, 49.55)

Note. CI = confidence interval; SF-12 = 12-Item Short Form Health Survey. Step 1 controls for ethnicity, sex, and age; Step 2 controls for ethnicity, sex, age, and equivalized household income; Step 3 controls for ethnicity, sex, age, and exposure to racial discrimination; and Step 4 controls for ethnicity, sex, age, equivalized household income, and exposure to racial discrimination. Range of unweighted SF-12 scores: White British group (0–77.11); Indian group (12.08–70.46); Black African group (10.29–68.65); Pakistani group (7.95–70.45); Bangladeshi group (4.89–69.18); and Black Caribbean group (8.22–70.53).

previous experiences of racial discrimination or their lifetime exposure to social inequality. It has been argued elsewhere<sup>39</sup> that certain measures of socioeconomic disadvantage contain significant residual confounding of an underlying concept, and this was likely reflected in our results. For example, income does not adequately reflect all dimensions of disadvantage, and, similarly, exposure to racial discrimination in the last 12 months cannot fully capture the effects of racial discrimination over the life course. It also should be recognized that socioeconomic

disadvantage and racial discrimination are not evenly distributed across all ethnic minority groups, and this was evidenced in our findings.

In both cross-sectional and longitudinal analyses, we found that for the Black African group, taking into account the harm created by racial discrimination actually improved their levels of mental health, as compared with the White British group. The health advantage of the Black African group relative to the White British group has been previously reported,<sup>29</sup> so it was not surprising to see this improvement

increase once the effects of racialization were accounted for. Like all of the other ethnic groups included in this study, the Black African group was heterogeneous in terms of country of origin, reasons for migration, and differences in both the health and the socioeconomic profiles of the individual subgroups.<sup>40</sup> Therefore, the health advantage of the Black African group reported here may be applicable to only some people within this large group.

## Limitations

Even though this study was able to take advantage of longitudinal and multidimensional data, it was limited in some respects. First, the UKHLS did not ask respondents about exposure to racial discrimination over their life course. Therefore, we were unable to consider any of the processes or experiences of racial discrimination before their first interview.

Second, even though we were able to examine experiences across various domains of racial discrimination, the domains explored do not represent the full range of circumstances and places where racial discrimination could be experienced; thus, results presented here may have underestimated the prevalence of racial discrimination experienced by ethnic minority people in the United Kingdom and its association with mental health.

Third, we observed higher levels of racial discrimination at wave 3 than we observed at wave 1, indicating possible measurement error. In a previous study, people initially stated on a questionnaire that they had not experienced racial discrimination; however, during an in-depth interview later, they said that they had experienced racial discrimination but found it too difficult to discuss.<sup>29</sup> In this case, perhaps respondents were more willing to report experiences of racial discrimination at the second interview after having been alerted to the content of the questionnaire at the previous interview.

## Conclusions

Several longitudinal studies showed that racial discrimination predates poor health and reinforces ethnic inequalities in health.<sup>31</sup> In this study, we confirmed the longitudinal effects in a large population-based study and additionally showed that cumulative exposure to racial discrimination over time

**TABLE 4—Ethnic Inequalities in the Longitudinal Association Between Experiences of Racial Discrimination at Waves 1 and 3 and Psychological Distress (SF-12 Scores) at Wave 4: UK Household Longitudinal Study, 2009–2013**

	Step 1, b (95% CI)	Step 2, b (95% CI)	Step 3, b (95% CI)	Step 4, b (95% CI)
White British (Ref)	1	1	1	1
Indian	0.20 (−0.70, 1.10)	0.24 (−0.65, 1.14)	0.70 (−0.23, 1.64)	0.74 (−0.18, 1.66)
Pakistani	−2.15 (−3.44, −0.85)	−1.86 (−3.15, −0.57)	−1.66 (−2.96, −0.37)	−1.38 (−2.68, −0.09)
Bangladeshi	−1.51 (−4.66, 1.64)	−1.27 (−4.44, 1.90)	−1.01 (−4.10, 2.08)	−0.48 (−0.65, 1.53)
Black Caribbean	0.08 (−1.01, 1.16)	0.15 (−0.93, 1.24)	0.37 (−0.73, 1.47)	0.41 (−0.69, 1.50)
Black African	2.17 (1.03, 3.31)	2.38 (1.24, 3.51)	2.71 (1.58, 3.83)	2.90 (1.80, 4.03)
Constant	23.85 (22.82, 24.88)	23.27 (22.22, 24.31)	23.89 (22.86, 24.92)	23.31 (22.26, 24.36)

Note. CI = confidence interval; SF-12 = 12-Item Short Form Health Survey. Step 1 controls for Mental Component Summary (MCS) score at wave 1, ethnicity, sex, and age; Step 2 controls for MCS score at wave 1, ethnicity, sex, age, and equivalized household income; Step 3 controls for MCS score at wave 1, ethnicity, sex, age, and exposure to racial discrimination; and Step 4 controls for MCS score at wave 1, ethnicity, sex, age, equivalized household income, and exposure to racial discrimination. Range of unweighted SF-12 scores: White British group (0–78.08); Indian group (12.08–71.28); Black African group (11.14–75.11); Pakistani group (9.82–75.83); Bangladeshi group (12.43–68.65); and Black Caribbean group (12.33–68.18).

significantly worsens mental health. By making full use of new longitudinal data, we have been able to show how repeated exposure to racial discrimination over time, and accumulation of exposure across domains, affects the psychological distress of ethnic minority people in the United Kingdom and contributes to persistent ethnic inequalities in mental health. Studies that assess the cross-sectional association between racial discrimination and health, or examine exposure at 1 point in time, underestimate the harm of racial discrimination on the mental health of ethnic minority people and its contribution to ethnic inequalities in health. **AJPH**

### CONTRIBUTORS

All authors conceptualized the study and contributed to the interpretation of results and to the final version of the article. S. Wallace conducted the analyses guided by J. Nazroo and L. Bécarea. L. Bécarea wrote the first draft of the article.

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### HUMAN PARTICIPANT PROTECTION

Ethics approval was not sought for this work because it used publicly available, anonymized data.

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