



# Race, Unemployment, and Mental Health in the USA: What Can We Infer About the Psychological Cost of the Great Recession Across Racial Groups?

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## Abstract

Social scientists from a range of disciplines have provided evidence of a connection between unemployment and mental health. However, researchers recognize that poor mental health can lead to joblessness, highlighting the challenge of generating an accurate estimate of the impact of unemployment on mental health. In addition, virtually all of these studies use either self-reported measures of mental health or broad measures of emotional well-being such as self-esteem or constructs of general emotional health which are less than ideal. A shortcoming in the literature is that scholars have yet to examine whether race effects the extent of the effect of unemployment on psychological distress. Unemployment might have a smaller impact on blacks, because they have a higher degree of resilience due to encountering a greater and more intense array of life challenges, or a larger impact because of the fear of the consequences of unemployment due to structural discrimination and fewer buffers such as wealth. This paper uses measures of mental health based on the DSM-IV and ICD-10 diagnostic manuals to offer estimates of the link between unemployment and psychological distress for whites and blacks. We directly consider the prior mental health background of individuals to address the problem of reverse causality bias that mars virtually all existing estimates of the link between mental health and unemployment. This also allows us to offer convincing evidence on the relative effect of unemployment on mental health across racial groups. The analysis uses data from the National Comorbidity Survey-Replication. We construct two subsamples, one composed of those with no previous identified bouts of poor mental health (resilient) and a second group containing individuals with a history of psychological distress (vulnerable). Resilient persons, relative to those with a history of suffering from psychological distress, should be less likely to suffer a bout of poor mental health leading to unemployment. In addition, the influence of other covariates is likely different for resilient versus vulnerable individuals. Thus, our contention is that estimates generated using the resilient subsample will be less prone to suffer from reverse causality bias, measurement error, and specification bias. Hence, these estimates will provide the most accurate gauge of the mental costs of unemployment across racial groups. Our findings reveal that among resilient persons the pernicious effect of short-term unemployment on psychological distress is significantly greater for blacks. Our findings, based on data from the recession that began in 2001, allow us to infer that the Great Recession had a more intense adverse mental health effect on members of the black community. Our results imply that policymakers should consider both the monetary and psychological costs of unemployment, as well as their racial implications, when formulating policy to address the effects of economic downturns.

**Keywords** Race · Unemployment · Mental Health

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## Introduction

A persistent feature of the US labor market is the significantly higher rate of unemployment for blacks relative to whites. In the USA, the unemployment rate for black persons is consistently about twice the rate for whites. During the Great Recession, which ran from December 2007–June 2009, the rate of unemployment for blacks and whites soared in the USA. The unemployment rate for blacks during the Great Recession reached 15.9% while the white unemployment rate reached its zenith at 8%, lower than the pre-recession unemployment rate for blacks of 8.3%.

The disproportionate adverse economic consequences of the Great Recession on blacks in the USA are well-documented. During the course of the downturn, the racial wealth gap widened (Hamilton et al. 2015), and between 2007 and 2010, the median black household's income fell 10.1%, compared with a 5.4% decline for white households. However, an unexplored question is whether the adverse emotional consequences of unemployment are more severe for black individuals than white persons in the USA during any US recession, including the Great Recession. It is unclear whether the Great Recession generated relatively more intense psychological distress among blacks who experienced unemployment.

There is compelling evidence that blacks face discrimination in the labor market from audit (Darity Jr. and Mason 1998; Hamilton 2000), experimental (Bertrand and Mullainathan 2004), and survey-based studies (Goldsmith et al. 2007). This situation could result in unemployment generating even greater anxiety for blacks due to an expectation of a comparatively longer duration of unemployment. On the other hand, in an unfortunate, ironic twist of fate, blacks may be more resilient than whites in coping with the trauma of unemployment due to greater prior experience with such hardships as a result of racial discrimination.<sup>1</sup> Thus, a priori, it is unclear if experiencing a bout of unemployment damages the psychological well-being of a black individual more or less than a white individual.

We are unaware of any data sets that provide information on both the labor force and mental health status of individuals—based on a fully structured, lay-administered, diagnostic interview that generates diagnoses, rather than self-reports—during the midst of the Great Recession.<sup>2</sup> However, such information

is available in the *National Comorbidity Survey-Replication (NCS-R)*—which surveyed respondents once during the period from 2001 to 2003—when the US economy was in a less pronounced recession. Thus, if there is a stable racial gap in the relation between perceived prospects for reemployment by the unemployed and their mental health, then the estimates we report would be lower bound estimates of the link between unemployment and mental health during the Great Recession.

The purpose of this paper is twofold. First, to more accurately estimate the link between experiencing unemployment during the most recent year and the likelihood of suffering from poor mental health during the past year for blacks and whites using data drawn from the *National Comorbidity Survey-Replication (NCS-R)*. Second, using these results we infer the emotional consequences of the Great Recession within and across racial groups in the USA and discuss the policy implications of our findings. *Our findings reveal that for resilient persons—those without histories of poor mental health—the group for which we believe estimates of the unemployment mental health link can be considered plausibly more causal and accurate, the effect of short-term unemployment on psychological distress is significantly greater for blacks.*

## Race, Unemployment, and Emotional Vulnerability

Social scientists from a variety of disciplines have postulated that unemployment damages emotional well-being by depriving persons of the monetary and non-pecuniary benefits of work (Jahoda 1982), fostering feelings of helplessness, and generating both prolonged sadness and deep anxiety because of the failure to meet personal and social expectations (Seligman 1975; Erikson 1959).<sup>3</sup> There is also extensive evidence from psychologists documenting a link between unemployment and poor mental health across racial and ethnic groups and for men and women.<sup>4</sup>

In addition, there is reason to believe that those with lower levels of education, workplace experience, firm tenure, and health are especially at risk of suffering poor mental health from unemployment. This follows from conventional economics which predicts that when the economy slides into a recession, those workers perceived as less productive are more likely to be laid off. Thus, to the extent that black workers have accumulated less human capital, they may be more fearful of the economic and emotional consequences of a recession.

<sup>3</sup> For a review of the sociology and psychology literature predicting a link between emotional health and unemployment, see (Goldsmith and Diette 2012).

<sup>4</sup> For a review of the empirical literature in the field of psychology documenting an association between unemployment and mental health, see McKee-Ryan et al. (2005) and Paul and Moser (2005).

<sup>1</sup> For a discussion of the notion of greater resilience to traumatic experiences in the black community, see Macmillan and Hagan 2004.

<sup>2</sup> The American Life Panel, developed and administered by the RAND Corporation which contains panel data on 8000 individuals solicited over the internet, provides self-reported mental health appraisals along with labor force status. A number of studies find that self-reports of emotional well-being, when compared to records of health care for mental health disorders, are inaccurate (Nevin 2009). Since self-reports are commonly used by both health care practitioners and researchers, the National Institutes of Health (NIH) held an informative conference in 1997 entitled *The Science of Self-Report: Implications for Research and Practice* at which researchers and policymakers learned about many of the critical limits of “self-report” as a research tool. For an overview of the concerns discussed at the conference, see Garcia and Gustavson (1997).

However, this standard economic framework may provide an incomplete characterization of why black workers may suffer greater emotional costs when the economy contracts, since it fails to account for the social context facing workers across racial groups. Fortunately, a framework grounded in the field of economics has emerged—*stratification economics*—that internalizes a central role for contextual factors, not merely as controls. This perspective is capable of offering a more complete characterization of why blacks might fear, and suffer emotionally from, unemployment, more than whites aside from potential differences in skills.

## Stratification Economics

*Stratification economics* is an emerging paradigm in the discipline of economics that accounts for structural and intentional processes capable of generating and maintaining group differences in life outcomes.<sup>5</sup> It asserts that social phenomena such as group identity, which influence how members of a group are treated affects the impact of and their response to life course developments. Thus, stratification economics provides a framework capable of generating a richer understanding of difference in the emotional consequences of experiencing unemployment among members of socially distinct racial groups.<sup>6</sup>

Stratification economics incorporates Darity's (2001, 2005) *Functionality Theory of Discrimination* which advances the idea that discrimination by the dominant group (i.e., whites) intensifies when there is greater competition over valued resources, including access to opportunities, such as jobs. Therefore, the degree of discrimination against blacks will be lower when whites perceive less to gain or feel that their position of privilege is less threatened.

In the context of a recession, where jobs are relatively scarcer for all and, hence more valued, blacks would be viewed by whites as posing a greater threat to white economic well-being. This would lead to greater work place discrimination against blacks. Thus, the *Functional Role of Discrimination Hypothesis* predicts that, in a recession or shortly in its aftermath, unemployed blacks might expect to have an even more difficult time than whites securing job interviews and becoming reemployed due to a greater scarcity of jobs, which could make them especially fearful and anxious about unemployment.

Even in times of economic prosperity, blacks in the USA face an array of financial constraints, relative to whites, that limit their capacity to build a financial buffer to insulate themselves from the economic insecurities posed by joblessness. For instance,

<sup>5</sup> See Darity (2001, 2005), Aageson and Hamilton (2004), and Darity et al. (2015) for a detailed discussion of stratification economics.

<sup>6</sup> This framework also fosters insights about the consequences of unemployment within racial groups. For instance, Diette et al. (2015) use this paradigm to advance the notion that unemployment is more problematic for blacks with dark skin shades. In addition, they provide evidence consistent with this hypothesis.

blacks earn lower wages for comparable skills (Goldsmith et al. 2007), and take on exceptional kin obligations in part due to a greater likelihood of having family members facing financial stress (Chiteji and Hamilton 2002). These factors help to explain why blacks have accumulated less wealth than whites (De La Cruz-Viesca et al. 2015). Thus, a greater fear of being trapped in joblessness during a recession on the part of blacks due to labor market discrimination, given considerably lower levels of the cushion of wealth, suggests that blacks may be subject to higher levels of anxiety and stress—and hold more pronounced feelings of helplessness when unemployed.<sup>7</sup> Therefore, it is plausible—given the insights of stratification economics—that a bout of unemployment, particularly during or in the aftermath of a recession, poses a greater risk of suffering psychological distress for blacks than whites with equivalent levels of human capital.

However, stratification economics also can be used to generate a narrative suggesting that unemployment might have a smaller negative impact on the emotional health of blacks than whites in the USA. Blacks may exhibit greater resilience than whites to unemployment because, through experience, they learn to cope with difficult situations—to a greater extent than whites—because they have faced structural discrimination in a variety of domains. Thus, at the theoretical level, it is unclear whether unemployment can be expected to harm, to a greater or lesser extent, the mental health of blacks relative to whites. We are led to conclude that this is a question that must be resolved empirically.<sup>8</sup>

In the next section, we discuss the challenges inherent in obtaining a causal estimate of the impact of unemployment on mental health. In addition, we describe the strategy we adopt in this study to generate estimates—which can reasonably be described as the causal—of the effect of unemployment on psychological distress.

## Approaches to Investigating the Relation Between Unemployment and Mental Health: Association, Causality, and Bias

Panel data and plant level data are commonly used to estimate the association between labor force status and the emotional well-being of workers (Kasl and Cobb 1979; Hamilton et al. 1990; Classen and Dunn 2012). The identification advantage of using data from a single plant that has fallen on hard times

<sup>7</sup> The most recent round of the Survey of Consumer Finance (SCF) indicates that the median white family has nearly 10 times the wealth of the median black family (based on Dettling et al. 2017). Moreover, Hamilton et al. (2015) find that black families in which the head is unemployed typically have no assets—zero wealth—to deal with their financial calamity. Indeed, a narrative of a reliance on work, not assets, even for black professionals is a resounding theme that emerges from interviews probing how blacks in the USA understand their financial position (Jackson et al. 2015).

<sup>8</sup> See Catalano et al. (2000) for a test of the notion that Mexican Americans are more resilient to the adverse emotional consequences of unemployment than other groups.

is that if an employee had poor mental health it would not lead to a mass layoff. Thus, researchers who adopt their methodology believe that if workers who lost their job due to a plant closing subsequently exhibit poorer mental health—relative to those laid off from the same plant who are reemployed in the same area—then it can be inferred that layoffs or unemployment foster poorer mental health.

However, estimates of the connection between unemployment and mental health generated by such studies may suffer from a form of selection bias that leads to an unduly small impact of job loss on mental health. This form of selection bias arises because workers are likely to recognize when orders are falling off and inventories are building up, so they can anticipate a plant closing or a big layoff. One possibility is that the better employees—possibly those less likely to have poor mental health histories—will leave the firm prior to the layoffs; so the remaining workers are those with relatively poor mental health. This development would reduce the prospect of finding a difference in mental health between those subsequently laid-off due to a plant closing who remain unemployed, and those laid off from the same plant closing who find work in the area—since both groups started with poor mental health—even if unemployment further harms mental health. Thus, selection bias may account for the small adverse psychological impact reported when researchers use data on a plant closing.

Researchers using panel data examine whether persons moving from employment to unemployment, between a baseline period and one or more subsequent periods, exhibit a decline in mental health. An underlying assumption is that any change in mental health occurs after the change in work status. This assertion seems reasonable for employed individuals with sound mental health at the baseline.

However, some of those employed at the baseline will have a history of poor mental health. For them, a relapse or renewed bout of psychological distress following the baseline could conceivably lead to job loss. Thus, failure to account for mental health histories or pooling together employed workers at the baseline with different prior exposures to mental health disorders means that, even using panel data, the estimated connection between unemployment and mental health still may suffer from some degree of reverse causality. Indeed, the likely extent of such bias will depend on the distribution of mental health histories in the population of employed workers at the baseline. This may explain why some authors (Bjorklund 1985, and Salm 2009) do not find an effect of job loss on mental health when using panel data.

Kessler et al. (1988) recognized that among a group of workers who become unemployed, some may have contributed to their job loss due to a history of poor mental health. They attempt to address this source of simultaneity bias by analyzing a subsample of their data composed of persons who self-reported that they were *not responsible* for their unemployment. Subsample construction may be a viable way to assess whether

the link between unemployment and mental health is merely an association or is a causal relationship. However, justification bias may undermine the validity of the method used to identify the subsample of those not responsible in Kessler et al. (1988).

The concern is that unemployed with prior histories of poor mental health, who assert rightly or wrongly that they are *not at fault* for their predicament, will be placed in the subsample of persons without prior histories of poor mental health. Thus, the subsample Kessler et al. (1988) analyze may not achieve the goal of being composed solely of persons with sound mental health prior to losing their job.

As a strategy for attaining conceivably causal estimates of the relation between unemployment and mental health, this paper follows the concept of subsample analysis for identification advanced by Kessler et al. (1988). However, we use a different criterion for selecting our sample of individuals who have little likelihood of being persons whose emotional well-being contributed to their bout of unemployment. As we will demonstrate below, those with prior histories of poor mental health—we refer to these individuals as *vulnerable*—are far more likely to have had recent mental health issues.<sup>9</sup> These mental health issues may well lead to unemployment and therefore cause estimates generated with the vulnerable subsample—or the full sample since it will be composed of vulnerable and non-vulnerable persons—to suffer from reverse causality bias.

We contend that estimates of the connection between unemployment and mental health using a sample composed solely of resilient persons—those with no diagnosed history of mental health issues over a year ago, offer advantages over existing estimates in the literature. First, estimates from the resilient sample are less likely, than estimates from the vulnerable subsample—those with histories of poor mental health—or the full sample which includes both resilient and vulnerable groups, to suffer from endogeneity bias due to reverse causality.<sup>10</sup> This allows us to better ascertain if the effect of unemployment on mental health varies across racial groups—the focus of this paper.

<sup>9</sup> The designers of the *NCS-R* sought to limit false reporting of mental health, current and prior, by asking screener questions early in the survey that flagged persons with a potential mental health problem. Then, later in the survey, they go back and ask the set of questions to gauge each of the forms of mental health. The idea is that by asking the mental health question well after the questions about labor force status, which if in close proximity might prompt inaccurate responses, yields accurate responses about mental health.

<sup>10</sup> When analyzing retrospective information on unemployment, justification bias is always a concern. In the approach adopted by Kessler et al. (1988), they ask all respondents whether they contributed to becoming unemployed. If individuals indicate they are responsible then they are not included in the analysis sample. However, it is possible that persons who have prior histories of poor mental health—in our language vulnerable persons—who contributed to their unemployment may falsely report that “they are not responsible” for their unemployment. By shifting the blame to an external source, they are justifying their situation. Therefore, in this case, their estimates using the “not responsible subsample”—parallel to our notion of resilient—will suffer from reverse causality bias due to justification bias. We contend this is less likely to occur when a structured diagnosis of mental health history is used to separate respondents into our preferred analysis sample, our resilient subsample.



Finally, the conventional approach of pooling vulnerable and resilient individuals—when estimating the link between unemployment and mental health—constrains the coefficient estimates on all the control variables to be the same across these two groups. This can be problematic because a bout of psychological distress represents a relapse for vulnerable individuals and first onset for resilient persons. Since the marginal impact of the control variables on the likelihood of a relapse (i.e., vulnerable persons) or a first occurrence (resilient individuals) of poor mental health may be quite different, the approach we adopt provides a clearer understanding of the effect of other variables expected to affect mental health.

## Data and Measurement of Unemployment and Mental Health

### Data

We analyze restricted data from the *National Comorbidity Survey Replication (NCS-R)*. The survey was designed to collect information on mental health and its potential determinants in the USA through face-to-face interviews with respondents conducted in the privacy of their homes. The *NCS-R* was carried out on a group of 9282 racially and ethnically diverse respondents between February 2001 and April 2003. Our analysis is restricted to those identified as African American (black) and white, and we focus on evaluating if there are racial differences in the psychological consequences of unemployment during a recession.<sup>11</sup> The *NCS-R* also contains information on recent labor force status and psychological well-being.

The *NCS-R* is well-suited for examining if unemployment damages mental health for two reasons. First, this survey collects retrospective respondent information on mental health in a life event framework along with labor force status information for the most recent year. As a result, information on the age of first onset of mental disorders is available.<sup>12</sup> This allows us to separate respondents based on whether they ever have experienced mental health problems as of 12 months prior to the interview. We take advantage of this feature of the data by examining the link between unemployment and psychological well-being for persons with no previous reported mental health issues. For this group, if unemployment is accompanied by first

life-time onset of poor mental health it is more likely to be the case that unemployment led to the initiation of the poor mental health—and it is conceivable that the relationship is far less contaminated by reverse causality. Second, mental health disorders are formally diagnosed rather than relying on self-reports of symptoms or prior outside diagnosis. In the *NCS-R*, major depressive disorder, generalized anxiety disorder, and post-traumatic stress disorder are assessed using DSM-IV and ICD-10 diagnoses based on the Composite International Diagnostic Interview (CIDI), a state-of-the-art structured instrument designed to be used by trained, non-clinician interviewers.<sup>13</sup>

### Measurement of Unemployment

The *NCS-R* survey contains information on the number of weeks during the past year that the respondent spent: employed, unemployed, or out of the labor force. Based on the reason given for being out of the labor force, we determine if the individual is “voluntarily” out of the labor force (i.e., disabled, retired, in school, taking care of a family member) or someone considered a *discouraged worker*. We treat the latter category as time spent unemployed if they indicate that they would accept a job if offered one. Since our primary interest is in examining whether the effect of involuntary unemployment on mental health is different for whites and blacks, we exclude black and white survey respondents who report that they are “out of the labor force” for the entire previous year.<sup>14</sup> Following a standard convention adopted by the Bureau of Labor Statistics, we classify those who spent more than 16 weeks unemployed during the past year as having suffered from long-term unemployment while those who spent less weeks unemployed are designated as having experienced short-term unemployment.<sup>15</sup> Our count of weeks of unemployment in the past year is the total number of weeks unemployed, not a count of consecutive weeks unemployed.<sup>16</sup>

### Measurement of Mental Health

All *NCS-R* respondents were asked to provide retrospective information on broad screener questions for mental health to enable the identification of persons who in the past might have suffered from a range of emotional illnesses including major depressive disorder, general anxiety disorder, and post-

<sup>11</sup> For a detailed breakdown of *NCS-R* respondents based on race and ethnicity, see Table 5.1 of Holzer and Copeland (2000).

<sup>12</sup> Retrospective age-of-onset reports were obtained in the WMH-CIDI using a series of questions, and a pace, designed to enhance recall accuracy. A detailed discussion of these issues and how the *NCS-R* was designed and administered to address these concerns is provided in the “*NCS-R* screener notes to all users” and in (Kessler et al. 2005a, b).

<sup>13</sup> For a detailed discussion of this instrument, see First et al. (2002).

<sup>14</sup> Excluded observations include those who are retired, homemakers, in school, and physically or mentally unable to work.

<sup>15</sup> For evidence on the standard definition of short-run unemployment adopted by the U.S. government see [https://www.bls.gov/opub/ted/2010/ted\\_20100114.htm](https://www.bls.gov/opub/ted/2010/ted_20100114.htm)

<sup>16</sup> The *NCS-R* data do not provide information on how many separate bouts of unemployment a person has experienced over the past year.

traumatic stress disorder.<sup>17</sup> Respondents who are flagged as potentially having suffered from any of these maladies were administered the World Mental Health-Composite International Diagnostic Interview (WMH-CIDI) module for each disorder detected as a potential source of poor mental health by trained interviewers.<sup>18</sup> Responses on the battery of questions contained in the module for each condition were then used to make clinical diagnoses for each of two alternative classification systems: the DSM-IV criteria developed by the American Psychiatric Association and the ICD-10 classification mechanism developed by the World Health Organization.<sup>19</sup> The idea is to generate *pseudo clinical diagnoses* of mental health disorders such as depression or anxiety that are more accurate than simple self-reports on screener questions.<sup>20</sup> We take advantage of information in the survey on age of first onset for each of the disorders to construct the dependent variable in our analysis, *psychological distress*. It takes a value of one for those who have suffered from any of these three conditions in the most recent 12 months. In addition, we construct a prior psychological distress indicator of individuals who have suffered with bouts of any of the three disorders earlier in their life—before the most recent year.

## Summary Statistics

Our analysis sample contains 3008 respondents between the ages of 18 and 65, 2577 of whom are white and 431 (i.e., 14%) are black. Females comprise 53% of the whites in our sample and 63% of the blacks. We pool the males and females in our

<sup>17</sup> Researchers have found that unemployment can foster poor mental health through a number of channels; these represent the primary pathways. For instance, Seligman (1975) demonstrates how unemployment can generate a sense of helplessness leading to depression, while Kessler et al. (1988) discuss how unemployment can foster insecurity leading to anxiety. Moreover, unemployment also can be a traumatic event that is so salient that the moment of onset and subsequent impacts and fears are revisited regularly, leading to post traumatic stress disorder (Nandi et al. 2004).

<sup>18</sup> Each of the more than 300 professional interviewers employed by the Institute for Social Research at the University of Michigan who participated in the data collection process received 7 days of study-specific training and successfully completed two practice interviews before beginning their assignment. For instance, the Major Depressive Episode (MDE) module consists of 19 items. Each of these items can contain multiple questions that assess hallmark symptoms of depression, including persistent feelings of sadness as well as loss of interest or pleasure in life.

<sup>19</sup> The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) uses 16 spheres to gauge mental health while the International Classification of Diseases (ICD-10) evaluates mental well-being in 10 areas. Using either of these criteria frameworks, a *clinical-like* diagnosis on a zero to one scale is made indicating whether or not the person suffers from the condition.

<sup>20</sup> There is evidence of good concordance (Kessler et al. 2005a, b) between this clinical-like diagnosis and actual diagnosis of the same respondents made by experienced clinical psychologists using a structured clinical interview. See First et al. (2002) for a detailed discussion of the concordance between diagnosis made with the SCID by clinical psychologists and diagnosis generated by the WMH-CIDI using the DSM IV.

analysis because of the relatively small number of blacks and our focus on estimating the relation between unemployment and psychological distress for whites and blacks. Vulnerable persons account for 1237 of the observations in the analysis sample (41%) and there are 1771 resilient persons—1499 whites and 272 blacks—in the data we analyze.<sup>21</sup>

## Labor Force History, Recent Labor Force Status, and Psychological Distress

Table 1 reports the share of those suffering from psychological distress in the past year within each labor force status group (i.e., employed, short-term unemployed, and long-term unemployed) for the full sample and the vulnerable and resilient subsamples separately for white and black respondents. Recall that the subsample of resilient individuals includes those who either never experienced a spell of prolonged psychological distress or had their first bout of poor mental health in the past year. The vulnerable subsample includes respondents who were first diagnosed with any one of the three disorders more than 1 year ago.

Inspection of columns 1–3 of Table 1 reveals that among whites, although 22.3% of the full sample is identified as having suffered from psychological distress in the past year, only 4.1% of resilient whites were afflicted with poor mental health during the past year—which is a first bout for resilient individuals. A striking finding is that 47.6% of whites who had experienced psychological distress prior to the most recent year also endured a relapse of poor mental health over the past 12 months. Within the full sample of white respondents, those employed throughout the past year are less likely to suffer from psychological distress, 21.1%, than the unemployed (29.7%). This same pattern, a higher level of psychological distress for those who are unemployed relative to the employed, holds for both the vulnerable and resilient subsamples.

In the white vulnerable sub-sample—those with a prior history of poor mental health—62.7% of the short-term unemployed and 52.7% of the long-term unemployed, suffered from psychological distress in the past year. In stark contrast, in the resilient subsample—respondents without a history of poor mental health—only 4.4% of short-term unemployed and 7.6% of long-term unemployed experienced psychological distress in the past year.

<sup>21</sup> In a review of the literature on mental health in the USA, Kessler and Wang (2008) assert that the main take-aways are that the prevalence of mental disorder in the USA is very high and most who suffer from poor mental health experience their first onset during childhood. For instance, analysis of the National Comorbidity Survey reveals that nearly 50% of the respondents reported at least one lifetime disorder (Kessler et al. 1994). Similarly, 46% of National Comorbidity Survey-Replication respondents had a history of at least one DSM-IV disorder. Moreover, analysis (Bourdon et al. 1992) of data from the Epidemiologic Catchment Area Survey, administered in five US cities, reveals that 33% of the participants had at least one mental disorder over the life course.

**Table 1** Prevalence of psychological distress in the previous year by labor force status

	White			Black		
	Full sample	Vulnerable subsample	Resilient subsample	Full sample	Vulnerable subsample	Resilient subsample
All	22.3%	47.6%	4.1%	21.6%	47.2%	6.6%
Employed	21.1%	45.8%	3.8%	20.7%	47.2%	5.2%
Unemployed	29.7%	57.1%	6.1%	24.5%	47.2%	11.3%
Short-term unemployed	30.9%	62.7%	4.4%	26.5%	60.0%	12.5%
Long-term unemployed	28.6%	52.7%	7.6%	23.4%	42.3%	10.5%
Observations	2577	1078	1499	431	159	272

Source: National Comorbidity Survey-Replication

Psychological distress occurs when a respondent is diagnosed, using the DSM IV or the ICD-10 classification mechanism, as suffering from at least one of these conditions: major depressive disorder, general anxiety disorder, post-traumatic stress disorder; in the past 12 months. Vulnerable persons have suffered from psychological distress prior to the most recent year and may suffer poor mental health the current year as well. Resilient individuals have no prior—to the past 12 months—history of suffering from psychological distress, but may have been afflicted with poor mental health for the first time in the most recent 12-month period

The magnitude and distribution of suffering from psychological distress in the past year for blacks, columns 4–6 of Table 1, is virtually identical to that of whites; 21.6% of the full sample, 6.6% of those in the resilient subsample, and 47.2% of those in the vulnerable subsample suffered from poor mental health in the past year. Moreover, for the full sample of blacks, 20.7% of those who were employed throughout the past year and 24.5% of those who experienced some unemployment suffered from psychological distress in the past year.

Among the resilient blacks, 12.5% of the short-term unemployed and 10.5% of the long-term unemployed suffered from psychological distress. In the vulnerable subsample of blacks the percent who suffered from psychological distress in the past year is large; 60% for those who experienced short-term unemployment and 42.3% for those who endured long-term unemployment.

**Labor Force History and Recent Labor Force Status**

Table 2 reports the percent of respondents who in the past year experienced a spell of short-term or long-term unemployment (for the full sample and for the vulnerable and resilient

subsamples), separately for whites (columns 1–3) and blacks (columns 4–6). Inspection of Table 2 reveals that for the full sample of whites 14.1% were unemployed in the past year, and a similar share of whites were unemployed in the vulnerable and resilient subsamples—15.6% and 13.1% respectively. The spell of unemployment rate for blacks is much higher, 22.7% in the full sample, and virtually the same share of blacks is unemployed in both of the subsamples.

For whites and blacks—in the full samples and in the subsamples—the likelihood of a spell of long-term unemployment is larger than short-term unemployment—which is not surprising since the NCS-R data were collected during a recession. Among the 14.1% of whites who were unemployed at some point in the last 12 months, 45% spent a total of less than 16 weeks unemployed (6.4/14.1)—were short-term unemployed—while the remaining 55% cumulatively spent at least 16 weeks (long-term) unemployed (7.7/14.1). The share of unemployed whites who experienced long-term unemployment in the vulnerable and resilient subsamples is about the same: 55% in the vulnerable subsample (8.6/15.6) and 54% (7.1/13.1) in the resilient subsample.

However, the distribution of unemployment is different for blacks, with a much greater share enduring long-term

**Table 2** Prevalence of a spell of unemployment in the previous year

	White			Black		
	Full sample	Vulnerable subsample	Resilient subsample	Full sample	Vulnerable subsample	Resilient subsample
Unemployed	14.1%	15.6%	13.1%	22.7%	22.6%	22.8%
Short-term unemployed	6.4%	7.0%	6.0%	7.9%	6.3%	8.8%
Long-term unemployed	7.7%	8.6%	7.1%	14.9%	16.4%	14.0%
Observations	2577	1078	1499	431	159	272

Source: National Comorbidity Survey-Replication

One to fifteen weeks for short term unemployment

unemployment. In the full sample of blacks—among the unemployed—66% (14.9/22.7) endured long-term unemployment, while 73% of the unemployed blacks in the vulnerable subsample and 61% of unemployed blacks in the resilient suffered from long-term unemployment. Thus, blacks face a higher unemployment rate than whites—and a larger share of the unemployment blacks experience is long-term.

### Demographic and Socioeconomic Controls

The *NCS-R* also provides extensive information on demographic factors that the literature (McKee-Ryan et al. 2005; Paul and Moser 2005) reveals as important determinants of psychological health. These include a respondent's educational attainment, age, marital status, and current family characteristics. In addition, information regarding the respondent's family characteristics when they were young are available, which allows us to control for whether they were raised by both of their parents, their parents' education level, and whether their family received public assistance when they were a youth. Table 5 (in the Appendix) provides detailed definitions for all of the variables used in our formal analyses of *psychological distress*, and Table 6 (in the Appendix) presents summary statistics for all of these variables, separately for white and black respondents—for the full sample and for the associated resilient and vulnerable subsamples.<sup>22</sup>

### Methodology

In order to investigate the impact of exposure to unemployment during the past year, relative to employment throughout the past 12 months, on *psychological distress* (PD) in the past year, we estimate the following model on the full analysis sample

$$PD_i = \beta_0 + \beta_1 U_i + \beta_2 \text{Black}_i + \beta_3 (U_i \times \text{Black}_i) + \beta_4 PPD_i + \beta_5 X_i + \psi_i + \eta_i. \quad (1)$$

*PD* takes on a value of one if individual *i* is gauged to have suffered from at least one of the three disorders contained in the index of psychological distress, otherwise it is zero.  $U_i$  is the indicator variable for experiencing unemployment in the past year,  $\text{Black}_i$  is the indicator for black persons, and  $PPD_i$  indicates bouts of psychological distress in the past (more than

a year before the time of interview).  $X$  is a vector of controls that accounts for other factors that may directly or indirectly influence mental health. It contains variables that reflect individual factors (i.e., country of birth, gender, level of formal schooling completed, age, and number of dependent children), family characteristics as a youth (i.e., raised by both biological parents, mother's education, father's schooling level, and whether the family was on welfare), and the local economic environment (county of residence unemployment rate).<sup>23,24</sup>  $X$  also contains variables that attempt to account for sources of social and economic support that might mitigate the impact of involuntary joblessness on emotional health (i.e., married or cohabitating, number of siblings, and number of adult children). In addition, all of the models we estimate include state fixed effects ( $\psi_i$ ) and an error term ( $\eta_i$ ).

To explore if the distribution of unemployment, between short-term and long-term, influences psychological distress, we also estimate another model that include two bivariate indicators to capture the extent of a person's unemployment experience over the past year.

$$PD_i = \beta_0 + \beta_1 SU_i + \beta_2 LU_i + \beta_3 \text{Black}_i + \beta_4 (SU_i \times \text{Black}_i) + \beta_5 (LU_i \times \text{Black}_i) + \beta_6 PPD_i + \beta_7 X_i + \psi_i + \eta_i. \quad (2)$$

Those individuals who experienced 1 to 16 total weeks of unemployment in the past year, whether or not the weeks were concurrent, are identified as short-term unemployed. Those who experienced more than 16 weeks unemployed in the past year are classified as long-term unemployed.

Estimating these equations on the full analysis sample assumes mental health history is not simultaneously related to employment status. The accuracy of the estimated relationship between unemployment and psychological distress is marred if this assumption is incorrect, which is likely to be the case.

The resilient subsample allows us to focus on those individuals without previously identified bouts of poor mental health. As noted earlier, we suspect that persons who report no prior history of psychological distress—never experienced psychological distress prior to the most recent year—will continue to be emotionally healthy during the most recent year or previous 12 months. Thus, using the resilient subsample we can reestimate Eq. (1) to generate an estimate that is less likely to suffer from reverse causality bias. Thus, we think of the estimates using the resilient subsample as revealing a linkage

<sup>22</sup> The mean value of every variable is similar in the full sample and for both subsamples for whites and for blacks respectively. Examination of Table 6 reveals that the average respondent in the white sample, relative to the average respondent in the black sample, is more likely to have completed at least a high school education, is more likely to be married or cohabitating, was more likely to be raised by both biological parents, is more likely to have a mother—and a father—who completed at least a high school education, was less likely to grow up in a poor family, and was less likely to have been born in a foreign country.

<sup>23</sup> Individuals living in local communities with higher rates of unemployment may experience greater worries about keeping a job and finding a job once unemployed.

<sup>24</sup> In this study, we pool women and men because of the small number of blacks in the vulnerable and resilient subsamples; we were unable to run the analysis separately by gender groups or to interact the gender indicator with the unemployment indicators to investigate if the link between unemployment and psychological distress—for blacks and whites—varies across gender groups.



between unemployment and psychological distress which can plausibly be considered causal.

There are conditions where our estimates using the resilient subsample could still suffer from reverse causality for a variety of reasons. For example, it is possible that some individuals in the resilient subsample are misclassified and should rightfully be in the vulnerable subsample. However, these individuals would need to represent a substantial portion of the resilient subsample to undermine the accuracy of the estimates. This would occur if there are many individuals who either (i) fail to report their prior poor mental health status because of poor recall or (ii) the WHO-CIDI survey questions or modules fail to identify those with mental health problems that employers are able to identify. These individuals could well have a bout of poor mental health in the current year—even though to this point in their life they have never suffered from poor mental health—that causes unemployment. In addition, some may be concerned that people might struggle to remember highly specific events, but the WHO-CIDI modules are designed to identify salient forms of distress such as depression, anxiety, and posttraumatic stress.<sup>25</sup> Therefore, we suspect that misclassification bias from failure to recall or inadequacy of the questions is limited.

Another challenge to the accuracy of the estimates generated using the resilient subsample would arise if a substantial group of individuals have mental health issues that are latent or dormant, these issues become manifest in the current year, and these individuals also experience unemployment in the past 12 months as well. These individuals would be misclassified or placed in our resilient subsample when they really belong in the vulnerable subsample.

## Results

We estimate the specifications assuming a probit distribution, using maximum likelihood estimation to determine the impact of unemployment and other factors on the probability that a person has suffered a bout of psychological distress in the past year. We report the marginal effects of the variable contributions from the probit model evaluated at the sample means for all the other regressors. The reference group for our unemployment estimates is white male respondents who are employed throughout the past year.

Our focus in assessing the findings we report is twofold. First, what is the sign of the estimated coefficient on unemployment (which reveals the effect for whites)—whether it is

pooled or separated into short-term unemployment and long-term unemployment—and are the estimated relationships statistically significant? Second, what is the sign and statistical significance of the estimated coefficient on the unemployment-race interaction terms, since these estimates will reveal if the estimated relation between unemployment and psychological distress for blacks is larger or smaller than for whites. In making inferences about whether the psychological consequences of unemployment differ for whites and blacks, we focus on our findings when using the resilient subsample, because we suspect these estimates will suffer from less endogeneity bias.

## Unemployment and Psychological Distress: Combined Short- and Long-Term Unemployment

Table 3 is a summary table which presents our estimates of the relation between unemployment and psychological distress when we do not separate unemployment by the duration of the spell using Eq. (1). Full results are presented in Table 7 (in the Appendix). In these models, we characterize a person as having suffered from unemployment if they were unemployed in the past year, regardless of how many weeks they were unemployed. In essence, we are pooling together persons who experienced short-term and long-term unemployment.

Examination of column 1 reveals that the estimated deleterious association between unemployment and suffering a bout of psychological distress is 4.3 percentage points greater than for comparable whites who were employed over the past 12 months.<sup>26</sup> Table 1 indicates that 21.9% of our white sample suffered from psychological distress in the past year. Thus, whites who were unemployed in the past year, relative to the average white in the sample are 20% more likely to experience psychological distress (4.3/21.9). Moreover, the pooled results indicate that there is no significant difference in the likelihood of suffering from psychological distress in the past year between blacks and whites who were unemployed at some point over that period (i.e., the estimated coefficient on the interaction term between unemployment and black is insignificant at conventional levels). However, these estimates are likely to suffer from reverse causality bias.

Persons who have been afflicted by psychological distress in the past—prior to the most recent 12 months—have a 34% greater probability of suffering from psychological distress in the past year relative to those who are resilient or who have no prior history of poor mental health (i.e., before the most recent year).

In column 2, we present our estimates on the subsample of vulnerable persons. White workers who had a history of poor mental health and who were unemployed in the past year are 8.9 percentage points more likely to suffer from

<sup>25</sup> Kessler et al. (2005b) offer evidence that respondents recall childhood experiences accurately, especially those that are traumatic, which suggests that recollection of traumatic adult events such as unemployment will not suffer from recall bias.

<sup>26</sup> Unemployed blacks also were significantly more likely to experience psychological distress than blacks who were not unemployed.

**Table 3** Probit estimates for impact of unemployment on psychological distress: summary

Variables	Pooled	Vulnerable	Resilient
Black	-0.031 [0.024]	-0.084 [0.053]	-0.001 [0.016]
Unemployment	0.043** [0.018]	0.089** [0.040]	0.018 [0.013]
Unemployment* black	0.003 [0.046]	-0.094 [0.105]	0.037 [0.026]
Prior psychological distress	0.342*** [0.009]		
Observations	3008	1237	1771

Source: National Comorbidity Survey-Replication

All specifications include state-fixed effects. Additional controls include race/ethnicity, net worth (measured in thousands), married or currently cohabitating, number of siblings as a child, number of adult living children, number of children in the household, whether born in the USA, gender, whether below the age of 31, whether raised by both biological parents, mother is at least a high school graduate, father is at least a high school graduate, and whether the family received welfare growing up. The estimates are stable if marital status and net worth are excluded. The results are also robust to including frequency of talking with friends, whether attending church regularly, and whether mother and father are currently living. If age is controlled for with age and age-squared instead of a cohort indicator variable, the marginal effect of long-term unemployment among the resilient (column 3) increases from 0.035 to 0.040

Robust standard errors in brackets

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

<sup>a</sup> The marginal effects reported are the total marginal effect

psychological distress than persons who were employed throughout the past year. Although 47.6% of the persons in the white vulnerable subsample experience psychological distress in the past year, this is still a large, 19% (8.9/47.6), increase in the likelihood of suffering from poor mental health due to being unemployed. The estimated coefficient on the unemployment black interaction term is negative, suggesting that blacks are more resilient than whites to the mental health consequences of unemployment; however, this relation is not estimated with precision. Some caution must be exercised in interpreting findings from the vulnerable sample because these estimates are likely to suffer from simultaneity bias since a history of suffering from psychological distress may well contribute to becoming unemployed. Fortunately, we believe that estimates generated with the resilient subsample will be more accurate, although they pertain to a particular subgroup—persons who do not have a history of poor mental health—which only constitutes 59% (1771/3008) of the sample.

Our estimates of the subsample of resilient persons are presented in column 3 of Table 3. For this group, whites who are unemployed are no more likely to suffer from poor mental health than whites who were employed thought out

the past year, and the black unemployment interaction term—although positive—is also insignificant. Thus, we are unable to detect an effect of unemployment on psychological distress for persons with a history of good mental health.<sup>27</sup> Hence, the finding from the pooled model of a negative association between experiencing unemployment and psychological distress appears to be driven by the adverse consequence of unemployment on mental health for those with history of poor mental health—and these estimates are expected to suffer from endogeneity bias.

### Unemployment and Psychological Distress: Disaggregated Short- and Long-Term Unemployment

It is plausible that the extent of unemployment influences the relationship between unemployment and psychological distress. To investigate this proposition, we estimate Eq. (2) which includes separate indicators to identify those who experienced short-term unemployment and those who endured long-term unemployment in the past year. Table 4 is a summary table which presents estimates of the relationships between the extent of unemployment in the past year and psychological distress.

Inspection of column 1 reveals that white workers who experience short-term unemployment during the past year are 5.6 percentage points more likely to suffer from psychological distress than comparable whites who were employed over the past 12 months. Those who endured more than 16 weeks of unemployment over the course of the past year—the long-term unemployed—are 3.2 percentage points more likely to experience poor mental health during the past year than whites who were employed throughout the past 12 months, but this estimate lacks precision. Unfortunately, these estimates are likely to suffer from reverse causality bias. White workers who report that they have been afflicted by psychological distress in the past—prior to the most recent 12 months—are 34 percentage points more to suffer from psychological distress in the past year relative to those who are resilient—those who have no prior history of poor mental health (i.e., before the most recent year).

Our estimates using data from the vulnerable subsample are presented in column 2. Inspection of column 2 reveals that experiencing short-term unemployment for whites in the past year leads to a significant 14.9 percentage point increase in the likelihood of suffering from psychological distress in the past 12 months. While the coefficient estimate on long-term unemployment is also positive, it is a

<sup>27</sup> While the interaction unemployment \*black term is not significant (so the effect of unemployment on psychological distress for blacks is not statistically different from whites), the point estimate for unemployed blacks—relative to employed blacks—is different from zero (the unemployed are more likely to experience psychological distress) with a  $p$  value of 0.017.

**Table 4** Probit estimates for impact of unemployment on psychological distress: summary using 1–16 weeks as short-term unemployment

Variables	Pooled	Vulnerable	Resilient
Black	–0.031 [0.024]	–0.084 [0.053]	–0.001 [0.016]
Short-term unemployment	0.056** [0.024]	0.149** [0.058]	0.008 [0.020]
Short-term unemployment* black	0.044 [0.067]	–0.024 [0.178]	0.063* [0.038]
Long-term unemployment	0.032 [0.024]	0.040 [0.052]	0.024 [0.017]
Long-term unemployment* black	–0.013 [0.057]	–0.093 [0.122]	0.021 [0.032]
Prior psychological distress	0.342*** [0.009]		
Observations	3008	1237	1771

Source: National Comorbidity Survey-Replication

All specifications include state fixed effects. Additional controls include race/ethnicity, net worth (measured in thousands), married or currently cohabitating, number of siblings as a child, number of adult living children, number of children in the household, whether born in the U.S., gender, whether below the age of 31, whether raised by both biological parents, mother is at least a high school graduate, father is at least a high school graduate, and whether the family received welfare growing up. The estimates are stable if marital status and net worth are excluded. The results are also robust to including frequency of talking with friends, whether attend church regularly and whether mother and father are currently living

Robust standard errors in brackets

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

<sup>a</sup> The marginal effects reported are the total marginal effect

third the size (4.0 percentage points) and is not estimated with precision. Moreover, although both of the estimated coefficients on the unemployment black interaction terms are negative, neither of them is statistically significant. Thus, among persons with histories of poor mental health, the magnitude of the relation between unemployment and psychological distress—for short-term and long-term unemployment—is the same for whites and blacks. However, for this group, because of their prior histories of poor mental health, the estimated relationship between unemployment and psychological distress is likely to suffer from bias due to reverse causality.

Among resilient individuals who are white, exposure to either short-term unemployment or long-term unemployment during the past 12 months does not significantly increase the likelihood of suffering from psychological distress relative to whites who were employed throughout the past year.<sup>28</sup> Unlike

<sup>28</sup> Relative to blacks who were employed throughout the past year, black who experiences short-term unemployment and those who experienced long-term unemployment, were more likely to suffer from psychological distress, with  $p$  values—respectively—of 0.025 and 1.00.

the estimates from the vulnerable subsample, these results are less likely to suffer from reverse causality and hence is a more accurate indicator of the mental health consequence resulting from unemployment. However, the estimated coefficient on the short-term unemployment black interaction term is positive and statistically significant indicating that blacks who experience short-term unemployment are more likely to suffer from psychological distress than whites who also experience short-term unemployment—by 6.3 percentage points. Thus, for persons with no prior history of poor mental health—spells of short-term unemployment manifest in more psychological distress for black workers in comparison to whites.<sup>29</sup> The interaction term of black and long-term unemployment, although positive, is not estimated with precision.

## Robustness

To explore the robustness of the findings reported in Table 4 to an alternative definition of what constitutes short-term relative to long-term unemployment, we reestimated with the alternative criteria that unemployment of less than 26 weeks is short-term. Thus, respondents who suffered unemployment in the past year totaling 17–25 weeks, who were previously classified as experiencing long-term unemployment, are now classified as having experienced short-term unemployment. These findings are presented in Table 8 (in the Appendix).

Inspection of columns 1–3 reveals that the pattern of findings (i.e., size of estimates and statistically significant) is largely the same when long-term unemployment is defined as at least 17 weeks of unemployment or as at least 26 weeks of unemployment. There are two exceptions. First, the size of the estimated coefficient on short-term unemployment falls when short-term unemployment includes persons who suffer 17–25 weeks of unemployment. Second, the estimated coefficient on the short-term unemployment race interaction term, using the resilient subsample, is no longer statistically significant as well as being smaller in magnitude (4.1 percentage points rather than 6.3). This later finding is especially important since results

<sup>29</sup> Case and Deaton (2015) offer evidence of a steady decline from 1978 to 1998 in mortality rates in the USA for whites, blacks, and Hispanics. However, this trend reversed for white non-Hispanics in midlife (i.e., aged 45–54) between 1998 and 2013—especially for those with a high school degree or less. They attribute this rise in mortality to drug and alcohol poisoning, suicide, and chronic liver diseases—and speculate that these developments reflect despair due to deteriorating economic prospects. It could be inferred from the findings reported by Case and Deaton (2015) that whites, relative to blacks, suffered more from poor labor market opportunities due to the great recession. However, Hansen and Netherland (2016) make a compelling argument that—rather than whites suffering from more anxiety and disappointment than blacks—whites had greater access to opioids through superior medical insurance coverage and a greater propensity to interface with physicians who were inclined to prescribe opioids.

using the resilient subsample are expected to be more accurate than estimates from the other models, and more likely to capture a causal relation between unemployment and psychological distress.<sup>30</sup>

### Race, Unemployment, and Mental Health During the Great Recession: What Can We Infer?

In this paper, we argue that estimates of the link between unemployment and mental health using a subsample of resilient persons are likely to be more accurate than estimates generated using analysis samples that include persons with prior histories of poor emotional health. An important finding is that among resilient persons, blacks who experience short-term unemployment are significantly more likely to suffer psychological distress than whites who also experience short-term unemployment. Thus, among the short-term unemployed during the 2001 recession, blacks were more likely to incur psychological costs. If the relationship between unemployment and mental health for whites and blacks that we uncovered for the recession that began in 2001 might apply to the period of the Great Recession, then we can infer that the emotional cost of that downturn also was greater for blacks.

During the Great Recession, the rate of unemployment among blacks rose dramatically, from 8.3% to a peak of 15.9%. The black civilian labor force for persons 25 years of age and older was 14.7 million at the outset of the slump, so about 900,000 were unemployed out of that total (U.S. Department of Labor 2008). If the black labor force remained roughly at this level, at the trough of the Great Recession for blacks, 2.3 million were unemployed—an increase of 1.4 million people.

In our data, 23% of the vulnerable subsample and 23% of the resilient subsample were unemployed. Thus we might expect half of those who became unemployed during the Great Recession, 700,000, to have been vulnerable persons who would be just as likely as whites to suffer from psychological distress. However, the share of the 700,000 blacks who were resilient and endured short-term unemployment during the Great Recession was more likely to suffer from psychological distress than the share of whites who experienced similar bouts of unemployment. Thus, the negative mental health consequences of the most recent economic slowdown may have been more pronounced in the black community than in the white community.

<sup>30</sup> However, it is still the case that relative to blacks who were employed throughout the past year, blacks who experience short-term unemployment and those who experienced long-term unemployment, were more like to suffer from psychological distress, with *p* values—respectively—of 0.074 and 0.055.

### Concluding Thoughts

There is widespread evidence of a connection between mental health and unemployment. However, the possibility that poor mental health leads to unemployment—reverse causality—has made it difficult to accurately estimate the strength of the connection and to determine whether unemployment causes psychological distress. Thus, little has been known with confidence about whether a recession harms the emotional health of blacks more than whites in the USA.

This paper introduces a new approach to estimate the relationship between unemployment and emotional health. This method is likely to generate more accurate estimates of the direct link between unemployment and mental health. However, the estimates generated using the resilient subsample must be applied with caution by policymakers. These estimates reveal the association between unemployment and psychological distress only for mentally resilient persons—for those with no prior history of poor mental health. The estimates are not generalizable to the portion of the population with previous bouts of poor mental health. Thus, from a policy perspective, although the estimates from the resilient sample may be more accurate with regard to reverse causality concerns for the subpopulation they come from, they cannot be applied to the typical person by policy makers concerned with understanding the non-monetary costs of unemployment.

We pair this estimating procedure with mental health evaluations based on the DSM-IV and ICD-10 diagnostic manuals, which are more precise than more commonly used respondent self-reports. Our preferred estimates, produced using a subsample of resilient persons—those with no prior history of poor mental health—reveal that blacks who experience short-term unemployment are more likely to suffer from psychological distress than whites who also endured short-term unemployment. However, this finding should be interpreted with some caution given its sensitivity to how we define short-term unemployment. Based on our findings, we can infer that the emotional cost of the Great Recession was even greater for blacks exposed to short-term unemployment than whites in similar circumstances.

We provide evidence that whites, and blacks to an even greater extent, who experience short-term unemployment suffer from emotional distress. This cost, in addition to the lost output and skill deterioration associated with idle workers, provides a greater incentive for policy makers to promote initiatives to prevent or reduce unemployment when recessions arise. In addition, policy to treat the psychological distress that the unemployed experience will better position them for reemployment and directly improve their emotional health. The findings also provide greater justification for a more expansive safety net that targets reducing the mental cost of being unemployed.



## Appendix

**Table 5** Definition of variables and associated summary statistics\*

Variables	Variable definitions
Subsample characteristics	
Vulnerable subsample	Composed of persons who have suffered from poor mental health prior to the past 12 months
Resilient subsample	Composed of persons who have not suffered from poor mental health prior to the past 12 months
Panel A: mental health	
PD (psychological distress)	1 if respondent diagnosed as suffering from major depressive disorder or general anxiety disorder or posttraumatic stress disorder at some point during the past 12 months using either DSM IV or ICD classification system, 0 otherwise
PPD (prior psychological distress)	1 if respondent diagnosed as suffering from psychological distress prior to the past 12 months, 0 otherwise
Panel B: labor force status	
Employed	1 if respondent was employed throughout the past 12 months, 0 otherwise
Short-term unemployed	1 if respondent spent 1–16 total weeks unemployed in the past year (need not be concurrent), 0 otherwise
Long-term unemployed	1 if respondent spent at least 17 total weeks unemployed in the past year (need not be concurrent), 0 otherwise
Panel C: individual characteristics	
African Caribbean or African American	1 if respondent reports being African Caribbean or African American, 0 otherwise
Hispanic	1 if respondent reports being Hispanic, 0 otherwise
Born in foreign country	1 if respondent reports being born outside of the USA, 0 otherwise
Female	1 if respondent reports being female, 0 otherwise
Young	1 if respondent is 30 years of age or younger, 0 otherwise
Well-educated	1 if respondent has completed 13 or more years of formal education, 0 otherwise
Panel D: family characteristics as a youth	
Raised by both biological parents	1 if respondent reports being raised by both biological parents, 0 otherwise
Mother well-educated	1 if respondent's mother has completed 12 or more years of formal education, 0 otherwise
Father well-educated	1 if respondent's father has completed 12 or more years of formal education, 0 otherwise
Mother education missing	1 if respondent's mother's education level is not reported, 0 otherwise
Father education missing	1 if respondent's father's education level is not reported, 0 otherwise
Family on welfare as a youth	1 if respondent reports that their family was on welfare at some point while growing up, 0 otherwise
Family on welfare as a youth missing	1 if respondent fails to report if their family was on welfare at some point while growing up, 0 otherwise
Number of siblings	Number of sibling's respondent had growing up. Top-coded at 6
Number of living children under 17	Number of living children under 17 years of age. Top-coded at 6
Panel E: family characteristics and locational factors as an adult	
Currently married or cohabitating	1 if respondent reports being married or cohabitating, 0 otherwise
Total number of adult living children	Number of children over the age of 16. Top-coded at 6
state	Respondents current state of residency
Local unemployment rate	County unemployment rate in respondents county of residency in 2002

**Table 6** Summary statistics

Variable	White			Black		
	Full sample	Vulnerable subsample	Resilient subsample	Full sample	Vulnerable subsample	Resilient subsample
Mental disorder this year	0.223	0.476	0.041	0.216	0.472	0.066
Mental disorder prior to this year	0.418	1.000	0.000	0.369	1.000	0.000
Unemployed/Discouraged 1 to 15 weeks of the last 52 weeks	0.064	0.070	0.060	0.079	0.063	0.088
Unemployed/Discouraged at least 16 of last 52 weeks	0.077	0.086	0.071	0.149	0.164	0.140
Unemployed/Discouraged 1 to 52 of last 52 weeks	0.141	0.156	0.131	0.227	0.226	0.228
Currently married/cohabitating	0.624	0.581	0.656	0.413	0.396	0.423
Number of siblings	3.118	3.150	3.095	4.582	4.667	4.533
Number of siblings-missing	0.007	0.010	0.004	0.014	0.013	0.015
Total number of adult living children	0.931	0.990	0.889	1.065	0.937	1.140
Born in Foreign Country	0.032	0.029	0.035	0.060	0.050	0.066
Number of living children under 17	0.833	0.844	0.825	1.332	1.522	1.221
Female	0.527	0.629	0.454	0.629	0.711	0.581
13 to 17+ years of school completed	0.614	0.607	0.620	0.520	0.522	0.518
Age 30 or less	0.255	0.212	0.286	0.323	0.340	0.313
Raised by both biological parents	0.839	0.815	0.856	0.543	0.528	0.552
Mother has 12 or more years of education	0.742	0.725	0.755	0.587	0.547	0.610
Mother years of education--Missing	0.070	0.069	0.070	0.132	0.107	0.147
Father has 12 or more years of education	0.647	0.627	0.662	0.357	0.371	0.349
Father years of education--Missing	0.121	0.137	0.109	0.371	0.365	0.375
Family on welfare as a youth	0.076	0.098	0.061	0.186	0.214	0.169
Family on welfare as a youth-missing	0.013	0.020	0.008	0.039	0.057	0.029
County Level Unemployment Rate in 2002	5.583	5.553	5.605	6.041	6.062	6.028
Observations	2577	1078	1499	431	159	272

Source: National Comorbidity Survey-Replication

**Table 7** Probit estimates for determinants of psychological distress: control variable results

Variables	Pooled	Vulnerable	Resilient
Currently married/cohabitating	−0.069 <sup>***</sup> [0.014]	−0.090 <sup>***</sup> [0.029]	−0.050 <sup>***</sup> [0.011]
Number of siblings	0.003 [0.003]	0.005 [0.007]	0.002 [0.002]
Number of siblings–missing	−0.012 [0.065]	0.011 [0.133]	−0.294 <sup>***</sup> [0.041]
Total number of adult living children	−0.014 <sup>***</sup> [0.005]	−0.036 <sup>***</sup> [0.011]	0.000 [0.004]
Born in foreign country	−0.015 [0.034]	0.017 [0.078]	−0.023 [0.029]
Number of living children under 17	−0.001 [0.005]	−0.009 [0.012]	0.007 <sup>*</sup> [0.004]
Female	0.055 <sup>***</sup> [0.013]	0.093 <sup>***</sup> [0.029]	0.025 <sup>***</sup> [0.010]
13–17 + years of school completed	−0.025 <sup>*</sup> [0.014]	−0.045 [0.030]	−0.012 [0.010]
Age 30 or less	−0.011 [0.016]	−0.026 [0.037]	0.001 [0.012]
Raised by both biological parents	−0.005 [0.017]	−0.044 [0.038]	0.022 [0.015]
Mother-12 or more years of education	−0.029 <sup>*</sup> [0.017]	−0.054 [0.037]	−0.006 [0.013]
Mother years of education missing	−0.014 [0.028]	−0.034 [0.064]	−0.005 [0.020]
Father-12 or more years of education	0.022 [0.017]	0.026 [0.037]	0.017 [0.013]
Father years of education-missing	0.028 [0.022]	0.074 [0.050]	−0.001 [0.017]
Family on welfare as a youth	0.030 [0.021]	0.099 <sup>**</sup> [0.047]	−0.022 [0.021]
Family on welfare as youth-missing	0.034 [0.042]	0.128 [0.098]	−0.316 <sup>***</sup> [0.036]
County unemployment rate in 2002 (in %)	0.012 <sup>*</sup> [0.006]	0.018 [0.014]	0.007 [0.005]
Observations	3008	1237	1771

Source: National Comorbidity Survey-Replication

Robust standard errors in brackets

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

**Table 8** Probit estimates for impact of unemployment on psychological distress: summary long term unemployment as 26 or more weeks

Variables	Pooled	Vulnerable	Resilient
Black	-0.031 [0.024]	-0.083 [0.053]	-0.001 [0.016]
Short-term unemployment	0.049** [0.022]	0.122** [0.051]	0.012 [0.017]
Short-term unemployment* black	-0.004 [0.064]	-0.125 [0.152]	0.041 [0.035]
Long-term unemployment	0.034 [0.027]	0.043 [0.059]	0.025 [0.019]
Long-term unemployment* black	0.012 [0.061]	-0.050 [0.132]	0.030 [0.034]
Prior psychological distress	0.342*** [0.009]		
Observations	3008	1237	1771

Source: National Comorbidity Survey-Replication

Robust standard errors in brackets

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ 

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