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Race differentials in employment effects of psychological distress: A study of non-Hispanic Whites and African-Americans in the United States

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Abstract

This study used two sub-samples of African-Americans and non-Hispanic Whites from the 2002–2003 U.S. National Survey on Drug Use and Health to examine differential effects of psychological distress (PD) on employment. Failing to reject exogeneity of PD in the employment specifications, we estimated standard probit of employment. We found that PD significantly reduced employment probability regardless of race; but the reduction was 7.4% for African-Americans, compared to 5.3% for Whites. Using individuals with PD only, we estimated the Oaxaca–Blinder decomposition and found endowments explained 61% of employment differences between Whites with PDs and African-Americans with PDs while 39% of these differences were due to unexplained factors. These findings suggest that targeted policies for prevention and effective treatment of PD might yield higher employment benefits for minorities.

Keywords

Mental illness; Mental health; Employment; Race differentials in employment

1. Introduction

Psychiatric disorders affect more than 25% of the US population in any given year and may adversely impact labor market outcomes (Department of Health and Human Services [DHHS], 1999). The indirect costs of mental disorders to the US economy amounted to an estimated \$79 billion in 1990, with loss of productivity due to illness representing 80% of these costs (Rice & Miller, 1998). Bartel and Taubman (1979) in one of the first studies indicated that individuals diagnosed as either psychotic or neurotic had a lower probability of being in the labor force, received lower wages, and worked fewer weekly hours. Most recently, using national surveys such as the Epidemiologic Catchment Area (ECA) study and the National Comorbidity Survey (NCS), researchers found that mental illness negatively affected labor force participation, employment as well as workers' annual income (Ettner, Frank, & Kessler,

1997; Frank & Gertler, 1991; Mitchell & Anderson, 1989). A study by Alexandre and French (2001) conducted in Miami-Dade County, Florida, found that depression significantly decreased the probability of employment as well as the number of weeks worked in the past year. Mental illness was also linked to a variety of negative functional outcomes, including longer disability periods and greater functional limitations (Conti & Burton, 1994). Evidence indicates that work outcomes were consistently better for patients whose mental illness has remitted (Berndt et al., 1998).

Ethnic and racial minorities face socio-economic conditions that may influence aspects of both mental illness and labor markets differentially. Almost one-quarter of African-Americans are poor; about twice as many African-Americans do not have health insurance as compared to Whites (U.S. Bureau of Census, 2005). Epidemiologic data suggest little difference in the onset of psychiatric disorders by race/ethnicity; however, minority groups are more likely to experience cumulative negative health consequences (NIDA, 2003). Hypothesizing that psychological distress affects employment and that its effects vary by race, the present study seeks to estimate the differential effects of psychological distress on employment for sub-samples of African-Americans and non-Hispanic Whites.

2. Analytical framework

The starting point of the empirical work is a reduced-form specification of employment written as follows (see Mullahy & Sindelar, 1996):

$$E_i = E_i(PD_i, X_i, \mu_i) \quad (1)$$

where E is employment; PD represents psychological distress; X is a vector of exogenous variables that include standard human capital labor supply covariates (e.g., age, gender, education, marital status, household composition), health conditions, and geographic controls; μ is unobserved characteristics and preferences. The subscript i refers to the individuals.

The effect of PD on E ($\partial E / \partial PD = E_{PD}$) estimated from standard regressions of Eq. (1) will be $\partial E / \partial PD = E_{PD} + E_\varepsilon \partial \varepsilon / \partial PD$ if $\partial \varepsilon / \partial PD$ is non-zero and such estimate will be biased. Indeed, M will be endogenously determined ($\partial \varepsilon / \partial PD \neq 0$) if unmeasured individual-level factors are correlated with psychological distress and employment (Staiger & Stock, 1997). In fact, psychologically distressed and non-psychologically distressed individuals may differ in unobserved ways that affect skills and ability and, thus, employment. For example, psychological disorders may make skill acquisition more costly and thereby result in lower skill levels for individuals with PD , who would then face lower chance of employment. Also, reduced income associated with employment gaps may lead to mental distress (Hamilton, Merrigan, & Dufresne, 1997).

Consistent estimates of Eq. (1) may be obtained by a two-stage IV (Instrumental Variable) technique, which generally yields larger standard errors, making it unnecessary to correct for endogeneity if it is not present (Davidson & MacKinnon, 1993). To test for the endogeneity of PD we used a method suggested by Smith and Blundell (1986), which consists of including residuals from a reduced-form equation for PD as a regressor in the employment equation and then testing this regressor's statistical significance. Under the null hypothesis, this regressor should have no explanatory power. A reduced-form specification of PD was expressed as follows:

$$PD_i = PD_i(X_i, Z_i, \varepsilon_i) \quad (2)$$

where X_i is previously defined in Eq (1) and ε is an error term. Previously used in this context (e.g., Saffer & Dave, 2005), the vector Z is an instrumental variable equal to one if respondent i reported having “experienced extremely stressful events in his/her life such as having been in combat, involved in a life-threatening accident, involved in a disaster, physically beaten or sexually abused, or any other extremely upsetting or stressful event”. To test instrument reliability we estimated a probit model of Eq. (2) and conducted a χ^2 -test for the significance of Z in explaining PD (Staiger & Stock, 1997). We did test for overidentifying restrictions as the number of excluded instruments was equal to the number of potentially endogenous variables, resulting in an exactly identified model.

3. Data and descriptive patterns

The study data come from the 2002 and 2003 National Survey on Drug Use and Health (NSDUH), formerly the National Household Survey on Drug Abuse initiated in 1971 (see SAMHSA, 2004a, 2004b). Public use files are available for selected years before 1990 and each year thereafter. The sampling design is a nationally stratified multistage area probability sample of the US population 12 years and older in the 50 contiguous states. In 1999, the sample size expanded almost fourfold to nearly 70,000 individuals. The survey used a combination of computer-assisted personal interviewing (CAPI) component administered by an interviewer, and an audio computer-assisted self-interviewing (ACASI) module where the interviewees used a laptop computer. Weighted screening response rates for the 2002 and 2003 surveys were each 91%, and the weighted interview response rates were respectively 79% and 77%. Homeless without a fixed address, members of the active duty military and persons in institutional group quarters were excluded from the sampling frame.

The variable ‘psychological distress’ (PD) is recorded in the dataset and defined as a “diagnosable mental, behavioral, or emotional disorder that resulted in functional impairment that substantially interfered with or limited one or more major life activities” (SAMHSA, 2002; p. 14). The definition meets the *Diagnostic and Statistical Manual of Mental Disorders–4th Edition* (DSM-IV) criteria, a systematic approach to classification and diagnosis of mental illness (American Psychiatric Association [APA], 1994). PD is an overall indicator of nonspecific psychological distress that was constructed from the K6 scale, a reliable predictor of mental illness in population studies (Kessler et al., 2003). Questions on employment asked whether the respondents worked in the past week before the interview date, whether they usually worked 35 or more hours per week, and when relevant, reasons why they did not work in the past week. The past week employment measures are consistent with the Bureau of Labor Statistics definitions (BLS, 2000). Defined in this manner, employment status may not correctly represent individuals who worked continuously for several months and then stopped working at least a week before the interview. Alternatively, some individuals may secure a job shortly before the interview and be designated as “employed” even though they worked little during the preceding months. These measurement concerns probably apply to a small percentage of survey respondents, but it is noteworthy that changes in variable definitions and the timing of survey administration could have an impact on the empirical results.

The analysis sample was restricted to individuals 24–64 years old. Schooling will be completed for most of these individuals and retirement will not be a widespread phenomenon. Moreover, prevalence of psychological illness will be more homogenous in this group, relative to the entire adult population interviewed in the survey. The sub-samples included 4653 African-Americans and 29,423 Whites, with 9.82% and 11.02% of the individuals classified as psychologically distressed (PDs), respectively. Individuals with missing data on PD were dropped from the analysis. Table 1 reports the t -tests for independent samples to determine significant differences across PD categories and by racial groups. The employment variables were statistically significant ($p < 0.0001$) across PD status for both sub-samples. About 62.58%

of the African-Americans classified as psychologically distressed (PDs) were employed relative to 77.69% among those classified as non-psychologically distressed (N-PDs). Among Whites, 70.21% of PDs were employed relative to 81.69% of N-PDs. To account for the complex sampling design of the survey, we used 'svy' commands in STATA 8.0 (Stata, 2005) for the multivariable analyses and adjusted the standard errors using sampling weights in the dataset.

4. Estimation results

We focus on the results from the univariate probit models since we failed to reject the null hypothesis that psychological distress was exogenous in the employment equations for both the sub-sample of African Americans ($\chi^2(1df) = 0.01$; $p > 0.10$) and the sub-sample of Whites ($\chi^2(1df) = 0.61$; $p > 0.10$). The high values of the χ^2 -statistic for the significance of the instrumental variable in the first-stage probit estimations of psychological distress for African-Americans ($\chi^2 = 139.29$; $p < 0.001$) and for Whites ($\chi^2 = 711.69$; $p < 0.001$) imply that the endogeneity tests were relatively not sensitive to minor violations of the assumptions of IV techniques (Staiger & Stock, 1997). Moreover, both the Akaike's information criterion (AIC) and the Bayesian information criterion (BIC) indicate that the univariate probit model of employment fits better the data. The results of the IV estimations are available upon request. We present post-estimation of the marginal effects of PD in squared brackets. Evaluated at the mean values of the other variables, the marginal effects are the differences in expected probabilities of employment between individuals with no-PD and those with PD in each sub-sample (Greene, 2003).

4.1. African-Americans

The results indicate that psychological distress significantly reduced the probability of employment for African-Americans (Table 2). More specifically, the post-estimated marginal effect indicates that African-Americans with PD in the survey were 7.13% less likely to be employed compared to African-Americans with no-PD. Several other coefficients were predictors of employment for the sub-sample of African-Americans. Those who were between 50 and 64 years old were less likely to be employed, compared to African-Americans of ages 24–34 years. Men were more likely to be employed. Being married or co-habiting as well as having children less than 18 years old in the household were positively associated with employment for African-Americans. As expected, education and health status were positively related to employment. The results also indicate that having moved in past year reduced the probability of employment for African-Americans.

4.2. Non-Hispanic Whites

The results showed that psychological distress reduced employment for Whites; more specifically psychological distress was associated with a 5.00 percentage point reduction in the probability of employment for Whites (Table 2). Other coefficients were also predictors of employment in the sub-sample of Whites. Age was non-linear in employment; compared to individuals 24–34 years old, those between the ages of 35 and 49 were more likely to be employed whereas those 50–64 years old were less likely to be employed. Men were more likely to be employed. Education and health status were positively related to employment. Having moved in the past year also reduced employment for Whites.

4.3. Decomposing racial differentials of the employment effects of psychological distress

This study examines the extent to which racial differentials in the impact of psychological distress on employment is due to unmeasured factors or the qualitative differences in the nature and correlates of psychological distress between the two groups. To investigate this issue, we constructed a sub-sample that included only individuals with PD and estimated the Oaxaca–

Blinder terms (Oaxaca, 1973; Blinder, 1973). The Oaxaca–Blinder decomposition is widely applied to studies of wage differentials to understand the relative role played in group differences by levels of attributes or endowments such as education or job experience and by unobserved factors. Initially developed for continuous variables, the approach was recently adapted for discrete variables (e.g., Fairlie, 1999).

Let p_w and p_a be the means of employment probabilities for the two PD groups (indices w and a denote White PDs and African-American PDs, respectively; $p_w > p_a$). Let $\bar{X}_w$ and $\bar{X}_a$ be the row vectors of the means of the explanatory variables, m_w and m_a the column vectors of the marginal effects estimated from the univariate probit models, and c_w and c_a are the baseline predictions. The employment differential between the two groups is approximated as

$$p_w - p_a = (\bar{X}_w - \bar{X}_a)m_w + \bar{X}_a(m_w - m_a) + (c_w - c_a) \quad (3)$$

The observed differences between the two groups $p_w - p_a$ are decomposed into three parts. The first term is due to differences in endowments (E) and the last two terms represent differences due to unexplained factors (U) (Blinder, 1973). We used “gdecomp” in Stata 9 to estimate Eq. (3) (Stata, 2005). The adjusted difference in employment probabilities between the two groups was 0.0444, with an observed difference of 0.0764 and a residual difference equal to 0.0320. The overall endowment effect was significant ($E = 0.0308$; $p < 0.001$), that is, endowment effect contributed to 3.08 percentage points in higher employment opportunities of Whites with PD relative to African-Americans with PD. Almost 2 percentage points in lower probabilities of employment among African-Americans with PD were unexplained, possibly due to employers’ discrimination among other unmeasurable factors. But the unexplained factor was not significant ($U = 0.0136$; $p > 0.10$). In other words, endowments explain 61% of the employment differences between Whites with PD and African-Americans with PD while 39% of the difference may be due to discrimination. A likelihood ratio test rejects the null hypothesis that the employment specifications for African-Americans with PD and Whites with PD were the same and, thus, provides evidence of racial differences in overall employment for the two groups.

5. Summary and discussion

The objective of this study was to investigate racial differences in the effects of mental illness on employment. We used two sub-samples of African-Americans and Whites from the 2002 and 2003 NSDUH. Failing to reject the exogeneity of psychological distress in the employment specifications for both study samples, we calculated maximum likelihood estimates of employment using univariate probit models. The key findings were that mental illness significantly reduced employment for both African-Americans and Whites; but quantitative differences existed across racial groups. Psychological distress reduced the probability of employment by 7.4% among African-Americans as a group and by 5.3% among Whites.

Policy makers and researchers have long recognized the need for improved treatments for mental disorders; but employment opportunities among persons with mental disorders have not increased (Clay, 2006). The results that the negative impact on employment is greater for African-Americans than for Whites are consistent with previous studies showing that individuals with more than one “minority” trait experience compounding disadvantages in the labor market (e.g., Mayfield, Deb, & Whitecotton, 1999). While there is evidence that African-Americans show no more psychological distress than Whites when marital status and social class are controlled for, they have greater exposure to socio-demographic stressors than Whites (Mirowsky & Ross, 1980). These differences in life circumstances might partially explain racial differences in employment.

The study findings suggest that targeted policies for prevention and effective treatment of mental disorders of minority groups might have greater employment benefits. Some qualifications should be however noted. The NSDUH data are self-reported, which raises questions regarding validity and reliability. The survey procedures are designed to maximize honesty and recall and studies have indicated that the measures were reliable (Turner, Lessler, & Devore, 1992). Evidence also suggests that the use of ACASI and CAPI methods in NSUDH yields more valid results than other self-report methods (Aquilino, 1994). Hence, the empirical findings of the study should be interpreted in light of these limitations. Furthermore, it would have been more informative to analyze panel data in addition to cross-sectional data to control for personal and environmental fixed effects. Panel data would have allowed the investigation of longer-term effects from prolonged and recurrent mental disorders, especially given that African-Americans face more difficulties getting access to treatments relative to Whites. More studies are needed to cover the present issues as well as examine these issues among other minority groups such as Hispanics.

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Table 1

Variables in percentages by psychological distress status.

Variable	African-Americans		Non-Hispanic Whites	
	PD (N= 457)	N-PD (N= 4,196)	PD (N= 3,243)	N-PD (N= 26,180)
Labor supply				
Employed ^{a,b}	62.58	77.69	70.22	81.69
Socio-demographics				
Age24–34 ^{a,b}	58.64	49.14	52.78	45.77
Age35–49	35.01	38.27	37.91	39.46
Age50–60 ^{a,b}	6.35	12.58	9.29	14.77
Male ^{a,b}	29.54	42.56	32.40	48.80
Married or Cohabited ^{a,b}	25.38	36.34	44.60	61.38
Any children under 18 years old in household ^b	51.86	48.19	44.22	47.76
Less than high school ^{a,b}	24.29	15.46	16.50	13.44
High school and some college ^{a,b}	63.02	66.23	61.27	56.12
Graduate school ^{a,b}	12.69	18.31	22.22	30.43
Excellent health ^{a,b}	14.44	24.76	16.17	30.03
Very good health ^{a,b}	28.88	35.56	34.01	39.35
Good health ^b	31.29	29.81	30.28	23.58
Fair/poor health ^{a,b}	25.38	9.87	19.51	7.00
Lived in large metropolitan statistically area (MSA) ^{a,b}	49.45	54.58	32.30	35.02
Lived in small MSA	32.60	31.36	38.40	37.69
Lived in non-MSA ^a	17.94	14.06	29.30	27.28
Moved past year ^{a,b}	46.17	32.86	37.84	26.33
Survey Year 2002 ^b	50.30	53.27	50.06	52.00

^a Significant differences between African-Americans with psychological distress (PD) and African-Americans with no psychological distress (N-PD), $p \leq 0.05$.

^b Significant differences between Whites with psychological distress (PD) and Whites with no-psychological distress (N-PD), $p \leq 0.05$.

Table 2

Univariate probit estimates of employment.

Variable	African-Americans	Non-Hispanic Whites
Psychological Distressed	−0.235 ^{**} (0.068) [−0.074] ^{**}	−0.201 ^{**} (0.027) [−0.053] ^{**}
Age24–34	—	—
Age35–49	0.067 (0.049)	0.116 ^{**} (0.021)
Age50–60	−0.256 ^{**} (0.074)	−0.358 ^{**} (0.028)
Male	0.184 ^{**} (0.046)	0.506 ^{**} (0.019)
Married or cohabited	0.228 ^{**} (0.049)	−0.007 (0.021)
Any children under 18 years old in household	0.169 ^{**} (0.052)	−0.039 (0.025)
Less than high school	—	—
High school	0.486 ^{**} (0.055)	0.358 ^{**} (0.028)
Graduate school	0.800 ^{**} (0.078)	0.511 ^{**} (0.032)
Fair/poor health	—	—
Excellent health	0.858 ^{**} (0.076)	0.867 ^{**} (0.035)
Very good health	0.737 ^{**} (0.069)	0.903 ^{**} (0.033)
Good health	0.638 ^{**} (0.068)	0.688 ^{**} (0.033)
Lived in non-metropolitan statistically area (MSA)	—	—
Lived in large MSA	0.083 (0.062)	−0.020 (0.023)
Live in small MSA	0.092 (0.067)	0.018 (0.022)
Moved past year	−0.149 ^{**} (0.046)	−0.136 ^{**} (0.022)
Constant	−0.257 [*] (0.112)	0.027 (0.049)
Akaike's information criterion (AIC)	4597.49	25331.14
Bayesian information criterion (BIC)	4707.05	25472.07

Note: Control variable for survey year (2002 vs. 2003) was included but not shown. Standard errors reported in parentheses.

* Statistically significant, $p \leq 0.05$.

** Statistically significant, $p \leq 0.01$.