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An Analysis of the General Well-Being of Blacks and Whites: Results of a National Study

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The importance of race as a factor in mental health status has been a topic of controversy. This study examines racial variances in the relationship between selected socio-demographic variables and general well-being. The study also examines the appropriateness of an additive versus an interactive statistical model for this investigation.

Unlike other recent community based mental health studies, this study revealed significant differences between the general well-being of Blacks and Whites. Blacks continued to exhibit significantly lower levels of well-being even after adjustments were made for income, education, marital status, sex, age and place of residence. Statistical interaction was found between race and sex with Black females reporting lower levels of well-being than either Black or White males or their White female counterparts.

The controversy over the influence of race on mental health is a longstanding one. Early mental health status research invariably showed Blacks to have higher rates of mental illness. More recent researches vary in their reports, some claiming higher mental health status for Whites, while others report no differences between the two groups. Attempts to compare the mental health status of Blacks and Whites have traditionally been fraught with numerous methodological biases. Small population specific samples and the use of inappropriate statistical techniques often cause findings to be suspect and difficult to generalize. In addition, comparative studies have devoted little time to the selection of a suitable model for examining within and cross-racial differences in the relationship between mental health status indicators and socio-demographic variables. The purpose of this research is twofold: (1) to examine the relationship between race and mental health status (using the General Well-

Being Schedule as a measure) and (2) to examine racial differences in the relationship between selected socio-demographic variables and mental health status in order to determine an appropriate statistical model (additive or interactive) for analysis.

Research in the mental health area has followed a clear pattern. Early mental health studies were conducted almost exclusively using institutionalized populations where the main purpose was to examine "cases" of psychiatric impairment with the notion of trying to predict their occurrences. The second group of mental health studies focused on a more epidemiological approach using population based samples, but still with the basis being psychiatric case finding usually focusing on the prevalence of depressive and schizophrenic conditions. The third wave of mental health status research used social and psychological indicators to assess such states as happiness, satisfaction, morale or general well-being. The difference in this latter trend is that the emphasis is not "case" finding, but an attempt to assess the general mental health status of various population groups. Recently, there has been some progress in utilizing community based populations to study incidence and prevalence of psychiatric conditions (Weissman, 1987).

Research in the area of racial differences in mental health status has followed a pattern similar to that of the general mental health literature. Early clinical studies focused mainly on differences in levels of depression and schizophrenia, reporting higher rates of the more serious illness, namely schizophrenia, in Blacks (Green, 1914; Bevis, 1921). During the fifties there was some attempt to avoid some of the earlier stereotyping that had occurred (Malzberg, 1959; Schermerhorn, 1956). Early community studies examining mental health status used more epidemiological approaches, but had such small samples of Blacks that racial variations were not reported (Srole, L., 1962; MacMillan, 1959; Gurin, Veroff & Feld, 1960). The third wave of studies using a community based social psychological indicator type approach has reported, with few exceptions, significant zero order relationships between race and mental health status. This significant relationship usually disappears when socio-demographic variables are controlled. To a great extent, Blacks have been neglected in large community surveys (Berkman, 1971;

Warheit, Holzer, & Schwab, 1975; Comstock & Helsing, 1976; Freichs, Aneshensel, & Clark, 1981; Eaton & Kessler, 1981; Neff & Husaini, 1980). The recent Epidemiological Catchment Area Study sponsored by the National Institute of Mental Health is an exception (Weissman, 1987). This present research uses a national community based sample to examine the relationship between race, selected socio-demographic variables and general well-being, utilized here as an indicator of general mental health status.

Methods

Data for this analysis come from the first National Health and Nutrition Examination Survey (NHANES I) conducted between April, 1971 and October, 1975. This survey is the result of efforts by the National Center for Health Statistics to fulfill its Congressional mandate to obtain information about the health status of the population of the United States. NHANES I represents a nationwide probability sample of approximately 28,000 persons, aged 1-74 from the civilian non-institutionalized population of the coterminous United States, excluding those persons residing on Indian reservations (Miller, 1978).

The sampling design for this study is a multistage, stratified, probability sample of clusters of persons in land based segments. Of the 28,000 persons selected, 20,749 persons received the general nutrition component of the survey. A subset of 6,913 persons was selected to receive questions related to health care needs and to receive a more detailed examination. The specific source of data for this study is the 6,913 sample persons in the final detailed component.

Several aspects related to the study design have implications for the analysis of these data. These issues include the need for weights, the effect of cluster sampling on sampling error and the size and representativeness of the Black sample as a national sample.

The need to utilize adjusted sampling weights arises from three aspects of the design—the probability of selection into the sample, nonresponse and post-stratification. NHANES I was over sampled on certain subgroups, namely, persons with low incomes, preschool children, women of childbearing age and el-

derly persons for the general nutrition component. The nonresponse rate for the entire study was 26% and 30% for the detailed component. A study comparing NHANES I nonrespondents to respondents on certain health characteristics revealed no major discrepancies. Nevertheless, adjustments were made. In order to make the sample more closely resemble the civilian noninstitutionalized population of the United States, poststratification was employed. Consequently, in order to adjust for unequal sampling probabilities, nonresponse, and poststratification, adjusted sampling weights were used.

Another design aspect which has implications for the analysis of this study is that of the effects of clustering on sampling variance. With cluster sampling, the possibility exists that sample elements within a cluster are more homogeneous with respect to specific characteristics resulting in sampling variances which may be higher than those obtained from simple random sampling. SUPERCARP, a program using the Taylor Linearization technique for analyzing complex surveys was available. However, a decision was made not to use it when advice from statisticians familiar with the program and NHANES I data set indicated that because of the small Black sample, resulting statistics could be rather unreliable. As a result, conventional statistical procedures assuming simple random sampling were used and inferences made concerning statistical results are put into perspective considering the possible influence of "design effect".

A final consideration about the design NHANES I and its implications for analysis of these data has to do with the size and representativeness of the Black subsample and the resulting restrictions on performing detailed between and within group analyses. Blacks represent 873 or 12.6% of the total unweighted detailed examination sample of 6,913. When the weighted factor was applied, Black representation was reduced to 691 or 10% of the sample. In 1970, Blacks represented 11.1% of the total United States population and 9.8% of those persons 24-74 years of age.

Although these figures seem to be comparable to the proportion of Blacks in the population, it is unclear whether 691 respondents meet the size requirement for a national sample (Sudman, 1976). With over one-third of the 35 nationwide strata containing less than ten Blacks, the question of the representa-

tiveness of the Black subsample was raised (See Table 1). A subsequent comparison of the Black sample's distributions on selected socio-demographic variables to 1970 population estimates revealed similar distributions for race, sex, age, residence and marital status. Therefore, the evidence seems to suggest that the Black sample is a national one and is representative for the most part, although the size of the Black sample renders a detailed within group analysis difficult.

The main dependent variable, general psychological well-being, was measured by the National Center for Health Statistics' General Well-Being Schedule. General well-being here refers to "the net impact of the many sources which affect an individual's emotional or feeling states" (Dupuy, 1978). The Schedule contains eighteen items reflecting some of the major aspects of psychological well-being or distress that appear in the literature and represent six major concepts: freedom from health worry and concern, energy level, satisfying, interesting life, cheerful versus depressed mood, relaxed versus tense and anxious mood and emotional-behavioral control. The score ranges from 0-110 with a higher score representing a higher level of well-being or a lower level of distress.

In order to accomplish the goals of the study, the analysis was divided into five major phases. The initial step was to examine the sample design and frequency distributions using measures of central tendency. Secondly, the General Well-Being Schedule was examined to determine if the item-to-item and the item-total correlations were similar for Blacks and Whites. Dissimilarities in the Black-White correlations would implicate possible response bias in the data. If the correlations were substantially different, the indication would be that the questions were measuring different things in the Black and White populations and that the scores may not be comparable.

Thirdly, preliminary F-tests of the hypotheses concerning the equality of variable means for income, education, age, marital status, sex and place of residence were performed. Assuming a difference in Black-White mean scores, the question became one of accounting for it.

Fourthly, in order to determine if the effects of each of the independent variables on the dependent variable was the same

Table 1

Number of Examined Persons by Race and Stratum Number in the Detailed NHANES I Design: U.S. 1971-75

| | Total 6,913 | White 6,040 | Black 873 |
|---------|----------------|----------------|--------------|
| Stratum | | | |
| 1 | 167 | 117 | 50 |
| 2 | 143 | 121 | 22 |
| 3 | 146 | 106 | 40 |
| 4 | 189 | 139 | 50 |
| 5 | 240 | 202 | 38 |
| 6 | 130 | 100 | 30 |
| 7 | 143 | 90 | 53 |
| 8 | 122 | 115 | 7 |
| 9 | 121 | 116 | 5 |
| 10 | 153 | 134 | 19 |
| 11 | 196 | 192 | 4 |
| 12 | 179 | 176 | 3 |
| 13 | 177 | 176 | 1 |
| 14 | 228 | 223 | 5 |
| 15 | 177 | 155 | 22 |
| 16 | 185 | 147 | 38 |
| 17 | 192 | 185 | 7 |
| 18 | 176 | 160 | 16 |
| 19 | 208 | 202 | 6 |
| 20 | 169 | 165 | 4 |
| 21 | 271 | 271 | 0 |
| 22 | 169 | 113 | 56 |
| 23 | 204 | 161 | 43 |
| 24 | 174 | 137 | 37 |
| 25 | 237 | 187 | 50 |
| 26 | 243 | 196 | 47 |
| 27 | 236 | 220 | 16 |
| 28 | 275 | 180 | 95 |
| 29 | 225 | 207 | 18 |
| 30 | 248 | 215 | 33 |
| 31 | 203 | 191 | 12 |
| 32 | 222 | 212 | 10 |
| 33 | 219 | 215 | 4 |
| 34 | 211 | 209 | 2 |
| 35 | 335 | 305 | 30 |

for both races, null hypotheses regarding the similarity of effects were tested using the product interaction, race * X_i ; $i = 1, \dots, k$. A "p" value $\leq .05$ was used to reject the null hypothesis. If the effect within the Black and White groups were similar, the remainder of the analysis would assume that the multivariate effects of these variables were additive and could be examined without regard to racial status. Finally, analysis of the final equation resulting from a forward stepwise regression procedure was conducted to determine the relative contribution of significant variables.

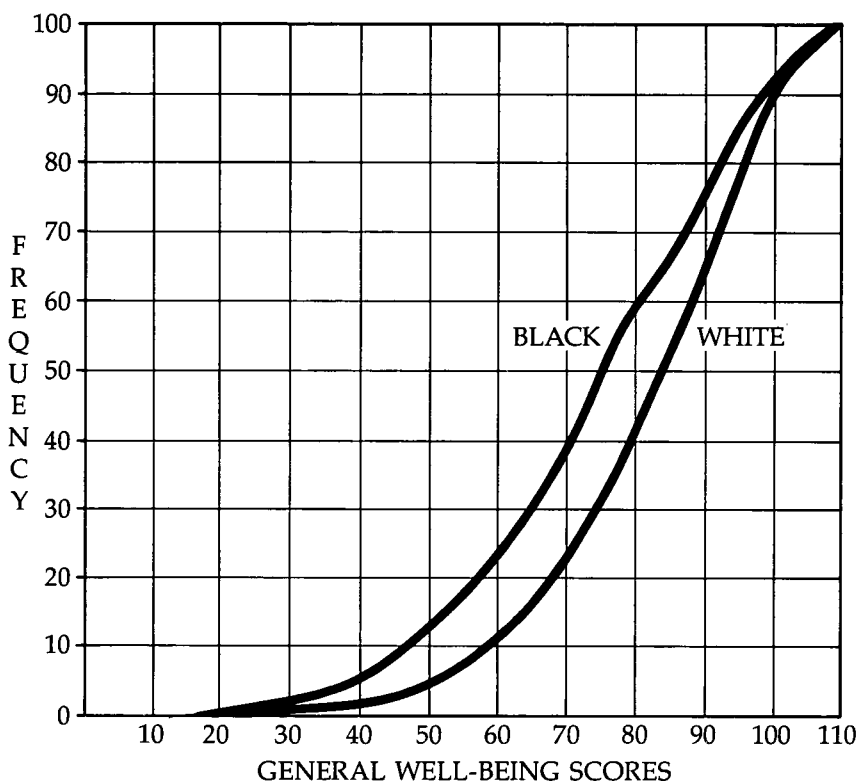
Findings

Initial examination of the frequency distributions of the dependent variable, general well-being, and several independent variables revealed that Blacks had lower general well-being scores than Whites with the weighted mean score for Whites being approximately 7 points higher than that of Blacks (See Figure 1). The mean score for Whites was 81.10 and 74.31 for Blacks. White scores exhibited less variability with a SD = 17.053, whereas the SD for Blacks was 20.017. Preliminary F-tests of the hypotheses concerning the equality of category means revealed significant overall F's for Whites for income, education, age, marital status, and sex (See Table 2). For Blacks, overall F' reached significance for the same variables with the exception of age (See Table 3). Place of residence was not significant for either group. When each of the socio-demographic variables was entered separately as controls with only race in a categorical regression model, general well-being scores for Whites remained significantly higher than those of Blacks.

Examination of the General Well-Being Schedule's internal consistency revealed very small differences existed between Black and White responses in terms of homogeneity of items, their relative contribution to total test variance and their correlation to each other and the corrected total. The instrument produced Alpha levels of .91 for Whites and .90 Blacks.

Using the general interaction model to test whether the effects of each of the independent variables on general well-being were the same for both races, the analysis revealed significant

Figure 1. Cumulative relative frequency polygon of general well-being scores by race



interaction between the races, no significant interaction effects were found between race and the independent variables income, marital status, age and place of residence. At each variable category, Whites had scores which were higher than those of Blacks. In both the Black and White sample, those families with incomes less than \$6,000 (poverty or near poverty) had significantly lower mean general well-being scores than those in the over \$6,000 income group. For both Blacks and Whites, those who were widowed, separated or divorced had significantly lower mean scores than those married or never married. The differential between races was greatest at the never married category where the Black-White mean score differential was twice that for the married category. Married Blacks had mean scores which ap-

Table 2

Mean General Well-Being Scores by Selected Sociodemographic Variables for Whites

| Variables | Mean GWB Scores | Weighted SD | Weighted N | P ≤ .05 |
|---------------------------------|-----------------|-------------|------------|---------|
| <i>Total Population</i> | 81.10 | 17.05 | 6,222 | |
| <i>Income</i> | | | | * |
| < \$6,000 | 76.46 | 19.52 | 1,318 | |
| > \$6,000 | 82.64 | 16.00 | 4,653 | |
| <i>Education</i> | | | | * |
| < High School Graduate | 78.24 | 18.79 | 2,078 | |
| High School Graduate | 81.31 | 16.09 | 2,304 | |
| Some College | 83.44 | 15.65 | 1,811 | |
| <i>Age</i> | | | | * |
| 25-39 | 80.99 | 16.53 | 2,292 | |
| 40-54 | 80.86 | 17.16 | 2,021 | |
| 55-64 | 80.34 | 17.65 | 1,138 | |
| 65-75 | 83.19 | 17.29 | 772 | |
| <i>Marital Status</i> | | | | * |
| Married | 81.92 | 16.46 | 4,976 | |
| Never Married | 81.70 | 17.19 | 387 | |
| Widowed, Separated, Divorced | 76.05 | 19.36 | 857 | |
| <i>Sex</i> | | | | * |
| Male | 83.87 | 15.80 | 2,975 | |
| Female | 78.55 | 17.75 | 3,247 | |
| <i>Residence</i> | | | | |
| Urban | 82.08 | 17.21 | 4,179 | |
| Rural | 81.06 | 16.74 | 2,043 | |

*Overall F-test significant at $P \leq .05$.

proximated those of Whites indicating a borderline statistically significant marital status-by-race interaction effect. For both Blacks and Whites, the 65+ age group reported the highest mean general well-being scores.

There was a positive relationship between education and general well-being for both groups. Those Blacks with some college showed scores approaching those of their educationally

Table 3

Mean General Well-Being Scores by Selected Sociodemographic Variables for Blacks

| Variables | Mean GWB Scores | Weighted SD | Weighted N | P ≤ .05 |
|---------------------------------|-----------------|-------------|------------|---------|
| <i>Total Population</i> | 74.31 | 20.02 | 691 | |
| <i>Income</i> | | | | * |
| < \$6,000 | 69.73 | 22.51 | 316 | |
| > \$6,000 | 78.14 | 16.65 | 349 | |
| <i>Education</i> | | | | * |
| < High School Graduate | 71.99 | 22.17 | 377 | |
| High School Graduate | 75.06 | 17.18 | 196 | |
| Some College | 81.46 | 14.81 | 106 | |
| <i>Age</i> | | | | * |
| 25-39 | 72.86 | 17.80 | 271 | |
| 40-54 | 75.47 | 19.79 | 238 | |
| 55-64 | 72.92 | 24.29 | 107 | |
| 65-75 | 77.82 | 21.30 | 75 | |
| <i>Marital Status</i> | | | | * |
| Married | 77.16 | 18.47 | 424 | |
| Never Married | 71.90 | 20.54 | 70 | |
| Widowed, Separated, Divorced | 69.00 | 22.06 | 193 | |
| <i>Sex</i> | | | | * |
| Male | 79.45 | 17.75 | 304 | |
| Female | 70.26 | 20.78 | 387 | |
| <i>Residence</i> | | | | |
| Urban | 74.49 | 19.98 | 571 | |
| Rural | 73.74 | 20.24 | 120 | |

*Overall F-test significant at $P \leq .05$.

similar counterparts, thus producing the significant education-by-race interaction effect. Males in both the Black and White sample had significantly higher mean scores than females. Black females had the lowest mean score of all. Significant sex-by-race interaction was reported with a "p" = .005.

In order to test the persistence of the sex-by-race and the education-by-race interaction, each of the other independent

variables was added sequentially to the equation containing the main effects as well as the interaction terms. The education-by-race interaction was no longer significant when the effects of income were controlled. The sex-by-race interaction remained significant at $F = 6.84$, " p " = .01. The persistence of the sex-by-race interaction suggests that the manner in which maleness or femaleness affects general well-being does differ by racial status. The lack of interaction on all the other variables indicates that their effects on general well-being are the same regardless of racial value.

Finally, in a forward (stepwise) inclusion regression procedure with pre-established hierarchy for race, education and sex, all of the variables entered the equation revealing a statistically significant difference in Black and White general well-being scores ($T = 6.11$, " p " = .01). Table 4 indicates an almost constant effect of moving from one category of education to the next. Unstandardized regression coefficients revealed a 5 point loss in general well-being when moving from the above poverty group to the poverty or near poverty group. Age showed a somewhat similar constant, though slightly decreasing trend in moving from the eldest group to the younger group. Unstandardized regression coefficients for the marital status categories were similar for the married and single groups with the effect of the widowed, separated or divorced status being slightly more severe. The sex-by race interaction remained significant in the model. Using a matrix coding system for the final equation variables, it was revealed that White males experienced a 10.29 point increase in general well-being scores as compared to Black women. Black male scores were 8.39 points higher than Black females. The Black female's White counterparts had scores which were 5.79 points higher than their own.

Discussion

An examination of the zero order relationships between selected socio-demographic variables and mental health status of Blacks and Whites revealed results similar to those reported in the literature. The variables race, income, education, sex, and marital status were all significant predictors of general well-being for Blacks and Whites with age being significant for Whites only.

Table 4

Unstandardized Regression Coefficients, Standard Errors, T-Ratios and Beta Coefficients for Variables in the Equation

| Variable | B | Standard Error B | T-Ratio | Beta |
|--------------------------------|-------|------------------|---------|------|
| D1 Race (White) | 5.79 | .95 | 6.11 | .10 |
| D3 Education (some college) | 4.35 | .57 | 7.58 | .09 |
| D2 Education (high school) | 3.42 | .52 | 6.56 | .11 |
| D1 Sex | 8.39 | 1.33 | 6.32 | .22 |
| D1 Income (< \$6,000) | -5.55 | .56 | -9.85 | -.12 |
| D1 Age (25-39) | -7.06 | .73 | -9.65 | -.19 |
| D2 Age (40-54) | -6.58 | .73 | -9.04 | -.18 |
| D3 Age (55-64) | -5.45 | .78 | -7.01 | -.11 |
| D2 Marital Status (single) | 2.76 | .62 | 4.36 | .07 |
| D1 Marital Status (married) | 3.88 | .99 | 3.94 | .05 |
| D1 Residence (urban) | -.96 | .46 | -2.12 | -.02 |
| Race*Sex (white—male) | -3.79 | 1.38 | -2.73 | -.11 |
| Constant | 75.88 | 1.29 | -58.69 | |

The positive relationship between general mental health status and income and education has long been documented in the literature (Berkman, 1971; Warheit, et al., 1973; Comstock & Helsing, 1976; Dohrenwend & Dohrenwend, 1969). Consistent with the literature, significant differences were found between the mental health status of males and females in both races, (Comstock & Helsing, 1976; Freichs, et al., 1981; Roberts, Stevenson, & Breslow, 1981; Warheit, Holzer, Bell, & Arey, 1976).

Like Comstock and Helsing, these results showed marriage to be associated with increased levels of mental health in Blacks to a greater degree than it is in Whites (Comstock & Helsing, 1976).

The finding that race remains a significant predictor of mental health status after controls for socio-demographic variables does not predominate in the community based social-psychological indicator studies. Berkman (1971), however, in his large Alameda County study did report that race remained significant. This finding suggests that there are other variables besides income, education, sex, age and marital status which contribute to the differential in the general well-being of Blacks and Whites.

The significant sex-by-race interaction was not supported by the literature, although most research in this area has not tested for interaction effects. Although their findings did not involve the race variable, Comstock & Helsing (1976) did report interaction between marital status and sex and Warheit (1973) reported interaction between socio-economic status and sex in their mental health status studies.

This research concludes that there are significant differences in the mental health status of Blacks and Whites in the United States as measured by the General Well-Being Schedule. Although there are significant differences, these differences are essentially constant when examining the relationship of selected socio-demographic variables and mental health status of the races; the one exception being sex, which may interact with race. Income, education, sex, age and marital status are all significant predictors of general well-being, although they do not account for much of the difference in general well-being scores of Blacks and Whites. Although these data suggest an interactive model, because of the "design effect" and the small Black sample, results may not be strong enough to unequivocally recommend either an additive or an interactive statistical model for performing comparative analyses of the mental health status of Blacks and Whites. A strong recommendation of this study is for designers of national studies to give more attention to the selection of the Black sample. Black samples need to be larger not only for more reliable comparative analysis, but to fulfill the need for more detailed within group information which is presently missing on Blacks in the mental health literature. The sex-race

interaction suggests that future research on the effect of societal sex role assignments might hold some answers to differences in the mental health status of males and females in both racial groups. It is also suggested that future research not only include socio-demographic variables, but that some attempt be made to quantify the effects of such socio-cultural variables as social support and racism on the mental health status of various groups in the population.

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