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A COMPARISON OF DEPRESSIVE SYMPTOMS IN AFRICAN AMERICANS AND CAUCASIAN AMERICANS

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The study examined group differences in depressive symptomatology on the Beck Depression Inventory in 278 African Americans and 278 Caucasian Americans seeking psychotherapy. Relative to Caucasian Americans, African Americans reported less pessimism, dissatisfaction, self-blame, and suicidal ideation and more sense of punishment and weight change, but for reasons unrelated to depression. Self-dislike was a stronger manifestation of depression in Caucasian Americans, and sleep disturbance, loss of appetite, and loss of libido were stronger manifestations of depression in African Americans. Group differences were not accounted for by gender, marital status, age, or education. The study contributes to the understanding of sociocultural variants of self-reported depression by distinguishing different ways in which symptomatology may differ.

During the past two decades, there has been an increasing recognition of the role that sociocultural factors play in the etiology, manifestation, course, prognosis, and prevalence of mental illness (Kleinman, 1977; Marsella, 1980; Sartorius, 1973). Numerous demographic variables have been suggested as possible moderators to account for variations in depressive symptomatology. Level of Westernization often has been associated with variations in the manifestation of depression. People from Western cultures are said to psychologize their depression (i.e., emotional and cognitive report of distress), whereas people from non-Western cultures are said to somatize their depression (i.e., report of distress in the form of bodily complaints and physiological symptoms) (Canino, Rubio-Stipec, Canino, & Escobar, 1992; Katon, Kleinman, & Rosen, 1982; Marsella 1980). A more psychological report of depression has been found among more Westernized groups of non-Western societies (Kwang-Iel, Dongen, & Dae-Ho, 1999). Somatization of depressive symptoms has been observed in various cultures, such as China (Kwang-Iel et al., 1999), United Arab Emirates (Hamdi, Amin, & Abou-Saleh, 1997), Iraq (Bazzoui, 1970), and India (Teja, Narang, & Aggarwal, 1971). However, research suggests that somatic manifestations of depression are common among Western cultures as well (Katon et al., 1982; Kirmayer, 1984; Lipowski, 1990; Regier, Goldberg, & Taube, 1978; Wilson, Widmer, Cadoret, & Judiesch, 1983). Other demographic factors have been suggested as moderators of depressive symptomatology. Somatization is most prevalent among people of lower social class and educational level (Abiodun, 1995; Swartz, Landerman, Dan, & George, 1989) and among the elderly (Blumenthal, 1980;

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Gurland, 1976). Razali and Hasanah (1999), on the other hand, reported no significant demographic differences between people who tend to somatize to those who psychologize.

Racial group differences in the manifestation of depression also are well recognized (Blazer, Landerman, Hays, Simonsick, & Saunders, 1998; Brown, Schulberg, & Madonia, 1996; Neff, 1984; Simon, Fleiss, Gurland, Stiller, & Sharpe, 1973). However, research is equivocal about the direction of the racial group differences. This controversy can be attributed to different methods of assessment as well as to the unique characteristics of the samples studied.

Several studies compared variations in depressive symptomatology in African Americans and Caucasian Americans. Blazer et al. (1998) found that elderly African Americans were more likely than elderly Caucasian Americans to report less hope about the future, poor appetite, and concentration difficulties. Additionally, African Americans reported talking less, feeling that people were unfriendly, feeling disliked by others, and being more bothered than usual. However, racial group differences in somatic complaints and life satisfaction disappeared after controlling for demographic variables. Brown et al. (1996) found that African Americans reported more somatic symptoms than did Caucasian Americans, although both racial groups exhibited similar cognitive and affective disturbances. Simon et al. (1973) found that African Americans reported more worry, muscular tension, general anxiety, and autonomic symptoms than did Caucasian Americans, although the two groups were similar on levels of psychomotor retardation and depressed mood. Using 15 items of the Beck Depression Inventory (BDI), Greko, Brikman, and Routh (1996) found that African American patients with end-stage renal disease reported more somatic symptoms than did Caucasian American and Latino patients. No racial group differences in the cognitive symptoms of depression were found, once education was accounted for. The Epidemiological Catchment Area Study (Weissman, Bruce, Leaf, Florion, & Holzer, 1991) found that depressed Caucasian Americans tended to report more feelings of guilt, thoughts of death, and sleep and concentration problems, whereas depressed African Americans were more likely to report psychomotor changes and appetite changes.

Barbee (1992) and Mizell (1999) criticized the existing literature on African Americans as acontextual, arguing that research does not take into consideration the circumstances under which psychopathology develops in African Americans or the role that sociocultural factors over the life course play in the creation of psychopathology among African Americans. There are numerous socioeconomic, cultural, and historical differences between African Americans and Caucasian Americans that can partially account for variations in symptom manifestations of depression. Hall, Bansal, and Lopez (1999) proposed several variables to explain ethnic variations in self-report of psychopathology. These variables include the value of collectivism among ethnic minorities, racism as a constant stressor in the lives of ethnic minorities, and attempts to minimize discrimination among ethnic minorities.

Chung and Singer (1995) suggested that the presentation of distress among ethnic minorities is related to the nature of the stresses presented, the attitude regarding mental illness, the meaning attributed to the symptoms, and the coping mechanisms and resources available to the ethnic group. Similarly, Warheit, Holzer, and Arey (1975) suggested that oftentimes, the manifestation of psychopathology among African Americans is an adaptive reaction to their unique social and environmental conditions. It was argued that guardedness and interpersonal vigilance serve as an adaptive coping mechanism among African Americans (Carter, 1974).

Epidemiological studies suggest equivalent prevalence rates of depression among African Americans and Caucasian Americans (Weissman et al, 1991; Zung, MacDonald, &

Zung, 1988). However, when compared to Caucasian Americans, African Americans were more likely to receive a diagnosis of psychotic disorder and less likely to receive a diagnosis of mood disorder (Fabrega, et al. 1994; Leo, Narayan, Sherry, Michalek, & Pollock, 1997; Leo, Sherry, & Jones, 1998; Simon et al, 1973; Welner, Liss, & Robins, 1973). Adebimpe (1981) suggested that the race of the clinician, social and cultural distance between client and clinician, stereotypes of Black psychopathology, and biased diagnostic instruments might account for misdiagnosis of African Americans. However, misdiagnosis also can be attributable to racial variations in the manifestation of depressive symptomatology. Therefore, enhancing the knowledge of possible racial variations in the manifestation of depressive symptomatology is likely to improve diagnostic accuracy.

The purpose of this study was to compare depressive symptomatology in African Americans and Caucasian Americans by assessing whether African Americans and Caucasian Americans differ (a) in how individual symptoms are related to severity of depression and (b) in reported symptom severity that is related to factors other than severity of depression. We then evaluated the role of sociodemographic variables, such as level of education, marital status, age, and gender, in accounting for the racial group differences identified.

METHOD

PARTICIPANTS AND PROCEDURES

Participants completed the BDI (Beck, Rush, Shaw, & Emery, 1979) during the years 1974 to 1997. Most participants were seeking therapy at the Center, although a few were recruited especially for research purposes. The original sample consisted of the 284 outpatient African Americans and the 876 outpatient Caucasian Americans between the ages 18 to 65 who had no missing values on the BDI and on level of education. The African American sample consisted of all such available cases of African Americans at the center, whereas the Caucasian American group was sampled out of a larger pool of 5,745 outpatient Caucasian Americans. As part of the matched moderated regression data analysis, two samples for analysis were obtained by selecting all possible pairs of Caucasian Americans and African Americans who matched on total BDI score. This yielded 278 pairs of participants, including all but 6 of the African Americans.

To determine the comparability of the original samples and the samples actually analyzed, we examined the demographic and clinical characteristics of the original and matched samples (see Table 1). For both African Americans and Caucasian Americans, the matched sample did not significantly differ from the original sample on mean age (one sample *t* test) and on gender, education, and marital status distributions (chi-square). For the African Americans, the mean BDI of the original sample ($M = 17.65$, $SD = 12.11$) did not differ significantly from the mean BDI of the matched sample ($M = 17.00$, $SD = 11.36$). For the Caucasian Americans, the mean BDI of the original sample ($M = 19.69$, $SD = 10.58$) was significantly higher than that of the matched sample ($M = 17.00$, $SD = 11.36$), $t(277) = -3.94$, $p < .01$. Such a result might have been expected because in effect, Caucasian American participants were selected to match the virtually complete set of African American participants. In summary, the samples actually studied were similar in demographics to the full samples from which they were drawn; the Caucasian American sample was somewhat less depressed ($d = .25$) than was its source sample.

TABLE 1
Demographic and Clinical Characteristics of the Sample
Prior to the Matching Procedure and After Matching

Variable	Sample Prior to Matching		Matched Sample	
	AA (n = 284)	CA (n = 876)	AA (n = 278)	CA (n = 278)
Gender				
Males	115	397	113	123
Females	169	497	165	155
Marital status				
Divorced	33	86	31	30
Married	62	356	61	97
Single	127	351	125	109
Widowed	7	9	7	4
Separated	42	37	41	14
Education				
6th grade	2	5	2	2
7th-11th grade	22	20	21	9
High school diploma	86	124	84	46
Some college	70	208	68	69
College degree	65	285	64	92
Advanced degree	39	234	39	60
Age				
Mean	35.41	35.26	35.39	36.03
SD	9.42	10.67	9.55	10.89
Beck Depression Inventory				
Mean	17.65	19.69	17.00	17.00
SD	12.11	10.58	11.36	11.36

NOTE: AA = African Americans; CA = Caucasian Americans.

MEASURES

BDI. The BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is one of the most frequently used tests by practicing clinicians (Piotrowski, 1996) and is used with both clinical and nonclinical populations (Byrne, Baron, & Balev, 1998). The BDI is a 21-item self-report inventory that evaluates the severity of depressive symptoms. A meta-analysis conducted by Richter, Werner, Heerlein, Kraus, and Sauer (1998) suggested that some of the strengths of the BDI are its high internal consistency, high content validity, and validity in differentiating between depressed and nondepressed respondents. However, race of participants was not included in this meta-analysis.

The reliability of the BDI is considered to be good and comparable in both African Americans and Caucasian Americans (Carr, Gilroy, & Sherman, 1986). Molock, Kimbrough, Blanton Lacy, McClure, and Williams (1994) reported that the BDI is a reliable measure of suicidality in African Americans. Similar BDI means for African Americans and Caucasian Americans were reported by several researchers (Beck, Rial, & Rickels, 1974; Lester & DeSimone, 1995; Trent, Rushlau, Munley, Bloem, & Driesenga, 2000). Beck, Steer, and Garbeen (1988), in contrast, reported that African Americans score slightly higher on the BDI. Similarly, Oliver and Simmons (1985) reported that non-Whites scored higher than Whites on the BDI.

Demographic information. Race was assessed by a self-report question that included the following categories: American Indian, Asian, Black, Hispanic, White, and other. Only participants who endorsed either the Black or White categories were included.

Level of education was assessed by a self-report question that included the following categories: 6th grade or less, 7th to 11th grade, high school diploma, some college, college degree, advanced degree.

Marital status was assessed by a self-report question that included the following categories: married, widowed, divorced, separated, single.

STATISTICAL METHODS

Each of the 21 BDI symptom items was analyzed separately. Matched moderated regression (MMR) (Young, Fogg, & Choi, in press) employs a traditional moderated multiple regression approach (Pedhazur, 1997) to model the relationship between a particular BDI item score (the dependent variable) and the BDI total score (the independent variable) for each group (the moderator). The modification is that participants are individually matched on BDI score so that group differences on item scores that are and are not related to the BDI score can be distinguished.

The full regression model includes the following terms: (a) the overall intercept; (b) group, coded 0 (African Americans) or 1 (Caucasian Americans). This term represents a group difference regardless of depression severity. This term will be referred to as the *group intercept*; (c) adjusted total BDI score (ABDI), the total BDI score not including the item being analyzed. Adjusting the total score avoids a spurious relationship of BDI with the item severity. This term represents the average relationship across groups of item severity and the severity of depression, that is, the regression slope. This term will be referred to as the *overall slope*; (d) the interaction of group and ABDI, formed as the product of these two variables. This term represents a group difference in the relationship between item severity and severity of depression, that is, the difference in regression slopes. This term will be referred to as the *group slope*. In summary, group differences in how the severity of a symptom is related to depression severity is assessed by the group slope term, and group differences in symptom severity that are unrelated to severity of depression (i.e., related to other factors) is assessed by the group intercept term.

The analysis proceeds by first testing the significance of the group slope term. A significant group slope indicates that the relationship of the symptom to depression severity is different for African Americans and Caucasian Americans. After obtaining a significant group slope, separate regressions are computed for each group to determine if the overall slope term is significantly greater than 0 for each group and to obtain the actual regression coefficient estimates (Pedhazur, 1997). In the case of a significant group slope, the analysis for this item is now complete. The group intercept term is not of interest because intercept differences cannot be interpreted in the context of slope differences.

If the group slope term is not significant, it is dropped from the regression model and the analysis is rerun to evaluate the group intercept and overall slope terms. If one of these terms is not significant, it is dropped from the equation and the remaining term is evaluated. A significant group intercept term indicates a race difference in the severity of this symptom but for some reason other than depression severity. If the group intercept term is not significant, then the symptom is manifested equivalently in Caucasian Americans and African Americans. If neither the group slope term nor the overall slope term is significant, then the symptom is not related to depression level. Methods for dealing with possible variance differences

in the two groups were followed (Overton, 2001), however, findings were the same regardless of whether these adjustments were made (details available from the authors).

RESULTS

Reliability analyses (Cronbach's α) of the BDI in the two groups yielded comparable results (African American, .895; Caucasian American, .902), suggesting that the measure is equally reliable for the two racial groups.

Prior to matching, the mean total BDI score of the Caucasian American sample ($M = 19.69$, $SD = 10.58$) was significantly higher than that of the African American sample ($M = 17.65$, $SD = 12.11$), $t(1158) = 2.71$, $p < .01$. However, it is unclear whether this represents a true difference in severity of depression, group differences in symptom reports that are unrelated to depression severity, or group differences in the nature of depression in African Americans and Caucasian Americans. These distinctions are addressed by the data analysis.

In the matched samples, there were significant group differences in level of education, $\chi^2(5, N = 556) = 25.39$, $p < .01$, and marital status, $\chi^2(5, N = 556) = 26.65$, $p < .01$. Relative to African Americans, Caucasian Americans were more likely to have a college degree or advanced degree and less likely to have 7th- to 11th-grade-level education or high school diploma. Relative to African Americans, Caucasian Americans were more likely to be married and less likely to be widowed, divorced, or single. There were no significant group differences in mean age or gender distribution. Table 2 summarizes the means and standard deviations of the 21 BDI items in the two groups.

GROUP DIFFERENCES IN HOW SYMPTOMS ARE RELATED TO SEVERITY OF DEPRESSION

Group slope terms were significant for Items 7 (self-dislike), 16 (sleep disturbance), 18 (loss of appetite), and 21 (loss of libido) (see Table 3). This indicates that the relationship between depression and the severity of these symptoms is different for African Americans and Caucasian Americans. Therefore, for these four items, separate regression analyses for each racial group were conducted with item score as the dependent variable and ABDI as the independent variable. Table 4 summarizes these analyses. ABDI was a significant predictor of item score for all four items in both racial groups. This indicates that all four symptoms can be considered as manifestations of depression in both groups. A comparison of unstandardized B weights in the two racial groups revealed that as depression severity increased, African Americans reported less self-dislike and more sleep disturbance, loss of appetite, and loss of libido than Caucasian Americans.

For the four items with a significant group slope effect (7, 16, 18, and 21), we conducted analyses to determine if the group slope effect could be accounted for (was mediated by) demographic variables. Regression analyses included item score as the dependent variable; race, ABDI, and the interaction between race and ABDI as independent variables; and each of the explanatory variables (gender, age, marital status, and education) and their products with ABDI as mediators. To assess mediation, marital status was dichotomized into married versus not married. This dichotomy reflects the racial group differences in marital status in the present sample. Because a mediator of a group slope effect is composed of both the interaction of the potential mediator with subscale severity and the potential mediator, a correlation of the mediator effect and race cannot be calculated. Therefore, all the available

TABLE 2
Item Means and Standard Deviations of the Two Racial Groups

Item	Group			
	African American (n = 278)		Caucasian American (n = 278)	
	M	SD	M	SD
1 Mood	1.03	0.98	1.00	0.88
2 Pessimism	0.80	0.93	0.96	0.93
3 Sense of failure	0.73	0.89	0.77	0.89
4 Dissatisfaction	1.09	0.93	1.23	0.99
5 Guilt	0.69	0.86	0.74	0.85
6 Sense of punishment	0.88	1.23	0.52	0.94
7 Self-dislike	0.89	0.77	1.14	0.87
8 Self-blame	0.92	0.86	1.14	0.85
9 Suicidal ideation	0.40	0.61	0.52	0.65
10 Crying spells	0.90	1.10	0.88	1.09
11 Irritability	0.95	0.85	0.88	0.79
12 Social withdrawal	0.79	0.87	0.79	0.83
13 Indecisiveness	0.89	0.89	1.00	0.98
14 Body image	0.59	0.87	0.58	0.83
15 Work inhibition	0.98	0.86	1.06	0.86
16 Sleep disturbance	0.94	0.98	0.84	0.96
17 Fatigue	0.98	0.88	0.93	0.88
18 Loss of appetite	0.63	0.88	0.44	0.74
19 Weight changes	0.37	0.80	0.25	0.66
20 Somatic preoccupation	0.70	0.88	0.50	0.72
21 Loss of libido	0.74	0.96	0.71	0.94

TABLE 3
Summary of Regression Results Predicting
Beck Depression Inventory Item Score (N = 556)

Item	Overall Slope			Group Intercept Effect			Group Slope Effect			R ²
	B	SE	β	B	SE	β	B	SE	β	
7 Self-dislike	.04	.00	.56**	.09	.09	.05	.01	.00	.14*	.43
16 Sleep disturbance	.05	.00	.58**	.12	.12	.06	-.01	.00	-.16*	.26
18 Loss of appetite	.04	.00	.60**	.09	.10	.05	-.01	.00	-.23**	.26
21 Loss of libido	.03	.00	.45**	.00	.11	.00	-.01	.00	-.19*	.15

* $p < .05$. ** $p < .01$.

demographic variables were evaluated as possible mediators of items that revealed group slope effects. Mediation was considered to occur if a previously significant group slope effect was no longer significant when a mediator was included in the regression model (Baron & Kenny, 1986).

For loss of appetite (Item 18), no mediators were found. However, both the group slope effect and the interaction of age and ABDI were significant ($B = -.0006$; $SE B = .0002$; $\beta = -.30$, $p < .05$), suggesting that the relationship between appetite loss and severity of depression varied based on both racial group and age. For the other three items (7, 16, and 21) no demographic variable was a mediator or was related to the symptom.

TABLE 4
Summary of Regression Results for Each Group Separately
for Items With a Significant Group Slope Effect ($N = 278$)

Item	Group							
	African American				Caucasian American			
	B	SE	β	R^2	B	SE	β	R^2
7 Self-dislike	.04	.00	.61**	.38	.05	.00	.66**	.44
16 Sleep disturbance	.05	.00	.57**	.32	.03	.00	.43**	.18
18 Loss of appetite	.04	.00	.56**	.31	.02	.00	.42**	.17
21 Loss of libido	.03	.00	.41**	.17	.01	.00	.30**	.09

** $p < .01$.

TABLE 5
Summary of Regression Results Predicting Beck Depression
Inventory Item Score Excluding the Group Slope Term ($N = 556$)

Item	Overall Slope Effect				Group Intercept Effect			
	B	SE	β	R^2	B	SE	β	R^2
2 Pessimism	.05	.00	.61**	.38	.17	.00	.09**	.18
4 Dissatisfaction	.06	.00	.69**	.49	.14	.05	.07*	.15
6 Sense of punishment	.04	.00	.41**	.19	-.37	.08	-.16**	.34
8 Self-blame	.05	.00	.64**	.43	.23	.05	.13**	.27
9 Suicidal ideation	.03	.00	.58**	.35	.13	.04	.10**	.21
19 Weight changes	.01	.00	.24**	.06	-.12	.06	-.08*	.16

* $p < .05$. ** $p < .01$.

GROUP DIFFERENCES UNRELATED TO SEVERITY OF DEPRESSION

For the remaining 17 BDI items, the group slope term was not significant. Therefore, the group slope term was dropped from the regression models and analyses were conducted with only ABDI and race as independent variables. Table 5 summarizes the results of the regression analyses. As expected, there was a significant overall slope effect for all 17 items. This indicates that each of these symptoms can be considered as a manifestation of depression. Significant group intercept effects were obtained for Items 2 (pessimism), 4 (dissatisfaction), 6 (sense of punishment), 8 (self-blame), 9 (suicidal ideation), and 19 (weight changes). The effect sizes of these differences (based on pooled item score standard deviation; see Table 2) were .18, .15, -.34, .27, .21 and -.16, respectively. These results indicate that for reasons unrelated to level of depression, Caucasian Americans report more pessimism, dissatisfaction, self-blame, and suicidal ideation than do African Americans. African Americans, on the other hand, for reasons unrelated to the level of depression, report more sense of punishment and more weight changes than do Caucasian Americans.

To assess whether the six significant group intercept effects could be accounted for by demographic variables, we conducted a mediated regression analysis, with item score as the dependent variable and ABDI and race as independent variables. Only the variables that revealed significant racial group differences (level of education and marital status) were entered into this analysis as potential mediators.

No mediators were found for any of the symptoms. However, self-blame (Item 8) varied based both on race ($B = .20$; $SE B = .05$; $\beta = -.11$, $p < .01$) and on level of education ($B = .06$; $SE B = .02$; $\beta = -.09$, $p < .01$).

DISCUSSION

This study compared self-reports of depressive symptomatology in outpatient African Americans and outpatient Caucasian Americans. We examined symptom differences not confounded by possible differences in depression severity and also examined both group differences in how symptom severity is related to depression severity and group differences in symptom severity that are related to factors other than depression severity. Last, we evaluated whether demographic variables can account for the racial group differences identified.

The results indicate that on nearly 50% of the BDI items (10 of 21), depressive symptoms were reported differently in the two racial groups. For 6 items, group differences in symptom severity were not related to depression severity. For 4 items, the groups differed in how symptom severity is related to depression severity. Five of the 6 items that exhibited group differences unrelated to depression were cognitive symptoms. In contrast, 3 of the 4 items that exhibited group differences related to depression were somatic symptoms. A pattern of somatic versus psychological symptoms also emerged. For the four somatic symptoms with group differences, African Americans reported greater symptom severity or a stronger relationship between symptom severity and depression severity. For the six cognitive symptoms with group differences, Caucasian Americans reported greater symptom severity or a stronger relationship between symptom severity and depression severity. Thus, both the vegetative and the cognitive symptoms varied across racial groups but for different reasons; most cognitive symptoms varied across the two groups for reasons unrelated to depression, whereas most somatic symptoms varied for reasons related to depression. These findings are only partially consistent with the suggestion of Katon et al. (1982) that the core vegetative symptoms of depression are similar across cultures, whereas the presentation of cognitive symptoms varies. This contrast with Katon et al. may be due to the ability of this study to detect two distinct kinds of difference in symptom report.

GROUP DIFFERENCES UNRELATED TO SEVERITY OF DEPRESSION

These are differences that occur between group members with equal severity of depression and that are equal in magnitude at all levels of depression; furthermore, they cannot be attributed to group differences in mean depression severity because the groups have been matched on this variable. Thus, these group differences must be the result of other factors on which the groups differ.

Group differences unrelated to depression were observed primarily in cognitive symptoms of depression. The fact that at equal levels of depression, African Americans reported less pessimism, self-blame, suicidal ideation, and dissatisfaction is consistent with the suggestion of Jenkins, Kleinman, and Good (1991) that somatization may serve as a coping style that "protects" the depressed individual from these feelings.

It also is likely that certain cognitive-affective variables are responsible for the racial group variations identified. Several studies have suggested that African Americans report more external locus-of-control beliefs than do Caucasian Americans (Ayalon & Young, 2002; Gracia & Levenson, 1975; Wade, 1996). An external locus of control among African

Americans is attributed to the fact that African Americans have limited access to opportunities as an ethnic minority group. An external locus of control may account for the findings that, unrelated to depression severity, African Americans reported more feelings of being punished and less self-blame, suicidal ideation, and dissatisfaction than did Caucasian Americans. Further research of a possible relationship between locus of control and report of depressive symptomatology is recommended.

GROUP DIFFERENCES IN HOW SYMPTOMS ARE RELATED TO SEVERITY OF DEPRESSION

These are group differences in the strength of the relationship between the severity of symptom and the severity of depression. They can be interpreted as differences between the groups in how depression is manifested. This type of group difference was observed primarily in the somatic/vegetative symptoms of depression. A possible explanation of this finding is that the interpretation of vegetative symptoms is different in the two racial groups and that African Americans tend to interpret the initial vegetative symptoms as more hazardous than do Caucasian Americans. Interpretation of the initial vegetative symptoms of depression as hazardous may amplify them and may account for the findings that as the level of depression increases, African Americans report more insomnia, loss of libido, and appetite loss than do Caucasian Americans. Further research of a possible relationship between the interpretation of somatic sensations and depressive symptomatology is recommended (Young, 1999).

THE ROLE OF DEMOGRAPHIC VARIABLES

This study evaluated whether demographic variables could account for racial group differences in symptom report. Overall, the two groups differed in marital status and level of education but did not differ in mean age or gender distribution. However, none of these demographic variables accounted for the observed racial group differences in symptomatology. Several demographic variables were related to symptom reports regardless of race; the relationship between appetite loss and severity of depression was stronger for those relatively younger. In addition, self-blame, regardless of depression severity, was associated with lower levels of education.

Several researchers have argued that once demographic variables that differ in African Americans and Caucasian Americans are controlled, racial group differences in depressive symptomatology disappear (Neff & Husaini, 1980; Warheit et al., 1975). Our findings, in contrast, suggest that racial group differences do not disappear once demographic variables are taken into consideration. However, results indicate that demographic variables, in addition to other, as yet unidentified, race-related factors play a role in symptom report.

THE IMPLICATIONS OF THIS STUDY

Variations in depressive symptomatology for reasons unrelated to depression severity constitute test bias, because something other than depression is being measured. Based on this study, six items demonstrated test bias. The expected degree of bias in the total BDI score was calculated by summing the unstandardized beta weights of the six items that demonstrated group differences unrelated to depression severity. This resulted in an expected bias of Caucasian Americans receiving a BDI score .18 points higher than African Americans with the same severity of depression. A bias this small (.016 *SDs*) is unlikely to have any

meaningful effect on the interpretation of test results, because the range of the BDI is between 0 and 63. The total score bias is so small because the direction of the bias differs across items so that when added together much of the bias cancels out. These results are similar to those of the meta-analysis of 31 years of Minnesota Multiphasic Personality Inventory (MMPI/MMPI-II) research by Hall et al. (1999). They reported that the aggregated effect sizes were higher for ethnic minority groups on some scales and lower on others. However, the overall report of psychopathology across different ethnic groups was comparable and there were no substantial clinical or statistical differences. Although the BDI contains both psychological/cognitive and somatic/vegetative items, it places a heavier emphasis on the former. A multidimensional approach that places an equal emphasis on both aspects, by adding more items to the somatic/vegetative dimension, may yield a more comprehensive understanding of variations in depressive symptomatology across different cultural groups. Another method that can correct for bias is the exclusion of items that reveal racial variations. However, exclusion of items may hamper understanding by altering the construct being measured. Assigning a differential weight to symptoms that revealed racial group differences is also not feasible, because a clinical interview is most often used in determining the diagnosis of depression. Therefore, this study should be used mainly as a means of increasing awareness and understanding of possible racial group differences in self-report of depression and not as a means of correcting scale bias.

Misdiagnosis of African Americans may occur because of the tendency of African Americans to report less cognitive-affective symptoms than do Caucasian Americans at similar levels of depression. Somatic symptoms, in contrast, were found to be more strongly related to the overall construct of depression in African Americans than in Caucasian Americans and, therefore, may serve as better indicators of depression for African Americans than for Caucasian Americans. Furthermore, as suggested by Katon et al. (1982), somatization of depression may delay effective treatment for depressive disorder.

The uniqueness of this study was its ability to distinguish between group differences in depressive symptomatology that are unrelated to depression severity and group differences that concern how symptoms are related to depression severity. Distinguishing between the two types of differences is important to the conceptual understanding of depressive disorder. It is important to note that race, in a biological sense, is not likely to be the cause of the variations identified. Instead, cultural, historical, and cognitive-affective variables associated with race are most likely responsible for the present findings. This study is consistent with the call of Celious and Oyserman (2001) to evaluate race as a heterogeneous construct and to assess the role of sociodemographic and other factors in racial group differences.

This study has several limitations. First, data were collected over a period of 23 years. Such a long period of data collection can introduce cohort effects. Second, the BDI places a strong emphasis on cognitive symptoms and a lesser emphasis on somatic ones. An exploratory study of this type would have benefited from including more somatic items. Third, the sample was clinically heterogeneous. If depressive symptomatology in individuals diagnosed with major depression is viewed as qualitatively different from the same symptoms occurring in distressed patients who do not meet depression criteria, then this study can only be viewed as providing information regarding racial variations in the report of distress. However, if one views depression as a phenomenon that occurs across a continuum of severity, then this study provides important information about racial variations in the symptomatology of depression. Fourth, this study was limited in its ability to identify possible mechanisms responsible for racial variations in depressive symptomatology. Incorporating a range of cognitive-affective variables as mediators would improve our understanding of race as a

cultural construct. Last, the study evaluated symptoms on a self-report questionnaire. It is not clear whether data from an interview format would yield similar findings. It is possible that the method of assessment plays a role in racial group differences in self-report of depressive symptomatology. Future research will benefit from using both a paper-and-pencil questionnaire and a semistructured interview.

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