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Black and White Men at Risk for Memory Impairment

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Abstract

Background—Blacks are under-represented in government-funded research. Epidemiological data indicate that morbidity and mortality in the United States are higher in Blacks than in Whites.

Objective—To examine memory performance in a sample of Black and White healthy men 70 years of age and older.

Method—Sixty-nine (24 Black, 45 White) men participated in a study of memory performance. All individuals lived either in private homes or subsidized high-rise apartments.

Results—Black men had higher anxiety about their memories, used fewer internal and external memory strategies, and had less confidence and less understanding of their everyday memory than White men. Based on their depression scores, more Black men (35%) were at risk for depression than White men (10%). Even though there were no differences in the numbers of men who lived alone, White men were five times more likely to be married and live with a spouse (27 vs. 5).

Conclusion—In this sample of Black and White men, there were no differences in actual memory performance, but significant differences were found in the subjective aspects of memory evaluation.

Keywords

African American; elderly; male; memory performance; memory self-efficacy

Data from the Health and Retirement study (Federal Interagency Forum of Aging-Related Statistics, 2000) suggests that in every age cohort above 65 years of age, more men than women have moderate or severe memory impairment, defined as 4 or fewer words recalled out of 20 (Federal Interagency Forum of Aging-Related Statistics, 2001). Herzog and Wallace (1997) found that as the cognitive function measures were disaggregated, men performed better than women on the mental status tasks, but worse on the memory tasks. Even when controlled for education and income, Black and Hispanic American males performed more poorly than Whites. Elderly Blacks, however, have difficulty with standardized screening tests, resulting in poor specificity and low predictive ability (Fillenbaum, Heyman, Williams, Prosnitz, & Burchett, 1990; Leveille, Guralnik, Ferrucci, Corti, Kasper et al., 1998; Whitfield, Baker-Thomas, Heyward, Gatto, & Williams, 1999; Whitfield, Fillenbaum, Albert, Berkman, Blazer et al. (2000).

Bazargan and Barbre (1992), studied Black elders' perceptions of self-memory problems. They found that 52% reported that poor memory and forgetfulness were either very (15.4%) or somewhat (36.6%) serious problems. Blazer and colleagues (1997) asked 3,080 elderly (1,386

White and 1,694 Black) “Is your memory getting worse?” They also found that subjective memory evaluation at baseline was not a predictor of cognitive function scores at 3 years; however, there was a greater decline in cognitive function for the Black elderly over time. The findings from these studies indicate that elderly Black men may experience a disadvantage in cognitive function and memory performance.

The results to date show how a detrimental relationship between memory, depression, and successful aging may be dependent on factors directly related to memory. Depression is considered a major public health problem since Blacks are less likely to seek treatment (Lebowitz et al., 1997; Steffens, Artigues, Ornstein, & Krishnan (1997). Strawbridge et al. (1996) found the absence of depression to be a significant predictor of successful aging (defined as not requiring assistance for activities of daily living or mobility) but, only 44 (12%) Blacks, of whom 18 were men were included in the sample. The purpose of this study was to examine memory performance, specifically everyday memory, in a sample of Black and White men 70 years of age and older.

Sample

A random sample, using a four-phase telephone-screening plan, was implemented. The procedures used reduced the need to give subjects feedback on their memory performance and avoided the potential dilemma of telling an individual he or she was disqualified because of memory failure. Additionally, the telephone screening reduced the costs of home visits (McDougall, Holston, & Wilke 2001). On the first telephone call, eligibility was determined by asking four questions:

1. Are you 70 years of age or older?
2. Is English your primary language?
3. What is your ethnic background?
4. What are your living arrangements?

During the second telephone call, the individual was queried as to whether he or she was interested in participating in a study of memory and health. If interested, a flyer was mailed to the home describing the study. If interest and consent were affirmed, a trained graduate research assistant administered the Short Portable Mental Status Questionnaire (SPMSQ) during the third telephone call, following a written script. The individual was thanked for participation and mailed a \$2 grocery coupon. If a subject was disqualified for memory failure, he or she was not called again.

Individuals making two or fewer errors on the cognitive screening test were eligible to be included in the study. The SPMSQ screens for serious memory impairment; it is not designed to screen for mild impairment. Therefore, those scoring < 8 on the SPMSQ were tested further with the Mini-Mental State Exam (MMSE). Three men scored < 23 on the MMSE and they were not included in the sample (they were not given feedback about their performance). During the fourth telephone call, individuals were informed that they qualified for a complete home interview, and, at that time, if interested, their address was confirmed and an interview was scheduled.

Of the total random sample contacted by telephone ($N = 529$), 90 individuals were disqualified for possible cognitive impairment. There were many dropouts during the four phases of recruitment. The total dropout rate was 86% for Black subjects and 75% for White subjects. Although the percentages of dropouts after the first and second calls were similar for both Blacks and Whites, dropout numbers increased for Blacks and decreased for Whites after the second call.

A major change in sampling was implemented to address the high dropout rate of Blacks between the third and fourth telephone calls. To increase the cultural sensitivity of the project, a Black graduate student was added to the research team. Next, the team formed a relationship with the administrative manager of the Golden Age Centers to enhance recruitment of Blacks by targeting subsidized high-rise apartment complexes. The team established rapport with the social service staff in each apartment complex, which referred residents to the research team.

A total of 218 subjects (149 women and 69 men) completed the study. The majority (63%) ($n = 138$) were recruited by random telephone procedures; the remainder (37%, $n = 80$) were recruited by convenience and snowballing methods. The Black sample was substantially increased. Only 24% of the Black subjects ($n = 23$) were recruited from random sampling methods, while 74% of White subjects ($n = 83$) were recruited by random sampling. In the convenience sample ($n = 80$), all interested individuals were tested and there were no dropouts. In this sample, however, 16 individuals with MMSE scores < 23 were eliminated from the data analyses. An additional 17 subjects were eliminated from the analyses for missing data. The final sample was 185, whom 69 were men.

Elderly Black men may experience a disadvantage in cognitive function and memory performance

Face-to-Face Interview

Subjects who completed the screening procedure were administered the study instruments. The instruments were administered in the following order. First, demographic information was collected, including age, date of birth, education, marital status, and living arrangements. Then, the metamemory, memory self-efficacy, and depression instruments were administered. Next, the 20-minute, timed memory performance test was given. The average time needed to complete the test was about 10 minutes; subjects did not appear to feel rushed. During the time that remained, and before the timer sounded, the health questionnaire was administered. Finally, when the timer went off, subjects were asked to remember two prospective memory items: "When is my next appointment?" and "May I have my personal belonging that was hidden?"

Memory self-efficacy was measured with the Memory Self-Efficacy Questionnaire (MSEQ), derived from Bandura's self-efficacy theory (Berry, West, & Dennehey, 1989). Alpha reliability in this sample was .97. Depression was measured with the Center for Epidemiological Studies Scale (CES-D), a measure of depression designed for research (Radloff & Teri, 1986; Hertzog, VanAlstine, Usala, Hultsch, & Dixon, 1990). Alpha reliability in this sample was .86. Metamemory, which includes the memory components of knowledge, beliefs, and affect, was measured with the Metamemory in Adulthood Questionnaire (MIA) (Dixon, Hultsch, & Hertzog, 1988). The MIA consists of seven subscales: (a) achievement, (b) anxiety, (c) capacity, (d) change, (e) locus, (f) strategy, and (g) task. Alpha reliabilities were .69 to .88.

The Rivermeade Everyday Behavioral Memory (RBMT) test served as the principal memory measure (Cockburn & Smith, 1989; Wilson, Cockburn, Baddeley, & Hiorns, 1989). The RBMT measures everyday memory and functions as a bridge between laboratory-based measures of memory and assessments obtained by questionnaires and observations (Cockburn & Smith, 1991). The test components are remembering a name (first and surname), hidden belonging, appointment, picture recognition, newspaper article, face recognition, new route (immediate), new route (delayed), message, orientation, and date. Each subtest is adjusted so that normal subjects would pass, but those individuals having everyday memory problems would fail. Each patient's evaluation results in two summarized scores, a Screening Score (SS) ranging from 0–12, and a Standardized Profile Score (SPS) ranging from 0–24. For each subtest and the

screening test, a pass/fail score of 0–2 (0 points = abnormal; 1 point = borderline; 2 points = normal), a standard profile score is produced. Test-retest reliability has been reported as a correlation of .78 for the screening score and .85 for the profile score (van Balen, Westzaan, & Mulder, 1996). In this sample, the alpha reliability coefficient was .65 for screening score and .72 for the standard profile score.

Data Analysis

The findings were analyzed with SPSS (version 11). Means and standard deviations were computed on all study variables; chi-square analysis was computed when appropriate. Next, group comparisons using analysis of variance and post-hoc comparisons were computed to determine group differences between Black and White men. Means and standard deviations were computed for all major study variables (Tables 1–3). Since the cell sizes (Blacks and Whites) were unequal, a number of checks were made to ensure the accuracy of the findings. Tabachnick, Fidell, and Fidell (2000) recommend that two criteria be met to ensure robustness. First, if sample sizes are unequal, the ratio between the largest and smallest groups should not be greater than 4:1. Second, an examination of the variances within each cell (standard deviations squared) should not produce a ratio of the largest to the smallest greater than 20:1. Both of these criteria were met.

Results

A mixed convenience ($n = 16$, 24%) and random ($n = 53$, 76%) sample of 69 men participated in the memory testing. All individuals lived in the community in Northeast Ohio, either in private homes or subsidized high-rise apartments. Of the Black sample ($n = 24$), 9 were widowed, 6 were married, 3 were divorced, and 6 were single. Seventeen of these men lived alone, 5 with a spouse, 1 with a companion, and 1 with someone else. Of the White sample ($n = 45$), 14 were widowed, 28 were married, 1 was divorced, and 1 was single. Fifteen of these men lived alone, 27 with a spouse, and 2 with someone else. No racial differences were found in age and numbers of chronic conditions (Table 1). However, the Black men had fewer years of education (10 vs. 14), lower cognitive function scores (26 vs. 28), and lower scores on mental health (78 vs. 87).

Memory and Metamemory Variables

Memory performance screening scores indicated that both groups of men had memory problems (Table 2). On the overall memory score, there were no significant differences between Black and White men; however, on average the White men scored two points higher than the Black men. Black men scored significantly lower on one memory item, orientation (8 vs. 1.2). On the three prospective memory items of appointment, belonging, and message, there were no differences. On memory self-efficacy, Black men scored significantly lower (24 vs. 36).

On the metamemory instrument (Table 3) Black men scored significantly higher on anxiety (3.31 vs. 2.88), and lower on task (3.37 vs. 3.90). Black men used fewer total memory strategies than their White counterparts (3.00 vs. 3.43) and fewer internal (3.09 vs. 3.38) and external memory (2.91 vs. 3.48) strategies. There were no differences in achievement, capacity, change, and locus scores.

Depression

Black men had significantly higher depression scores than White men (12 vs. 7). Chi-square analysis indicated that a significantly greater number of Black men were at risk for depression than expected: $\chi^2(4, N = 69) = 4.80, p \leq .05$. White men were not at risk (see Table 1).

Discussion

Although this study had a number of limitations (i.e., small sample, the use of mixed sampling procedures) it nevertheless provides insight into a group of older men not often studied. There was no difference in memory performance scores between the Black and White men studied. Both groups of men had memory scores that indicated every day memory problems.

Despite the many educational and socioeconomic disadvantages experienced by Black men that increase anxiety and depression, their memory performance was no different from their White counterparts. Black men scored higher, but not significantly than White men, on the prospective items of belonging and message. They scored significantly lower on internal, external, and total memory strategy use. This may be attributed to their educational preparation, which was on average 4 years less than that of the White men. Also, White men were five times as likely to be married and live with a spouse as Black men (27 vs. 5). Having a significant other in the house may have given the White men an advantage, and increased daily mental stimulation.

The Blacks' lower score on the task subscale of the metamemory instrument may be related to their higher anxiety scores. The task subscale is concerned with the understanding of basic memory processes, especially how most people perform (Hertzog, Dixon, Schulenberg, & Hultsch, 1987). A higher score indicates greater understanding. If Black men do not have a basic understanding of their memory functions, they have no way of knowing whether they are maintaining their ability or declining as they age.

A clinically important finding was the higher depression scores in the Black men. Seven (35%) Black men were at high risk for depression, compared to four (10%) White men. The number of chronic conditions was similar between groups (1.46 for Whites and 1.81 for Blacks).

Both groups in this study had very low memory self-efficacy scores. McDougall (1994) reported robust memory self-efficacy scores in a community-dwelling sample ($N = 41$) of high functioning older adult men, but similar low efficacy scores in a group of male nursing home residents ($N = 16$) with mild cognitive impairments. The average age of the men in this sample was 78 years. As they age, men have greater memory impairment and decreased memory self-efficacy (Federal Interagency Forum of Aging-Related Statistics, 2000; McDougall, 1999). However, Black men scored on average 12 points lower than White men. Given the difference in depression scores between the two groups, it is not surprising that Black men had lower memory self-efficacy scores. According to Bandura's (1997) self-efficacy theory, increased anxiety and depression lead to a decrease in domain-specific self-efficacy.

These study findings suggest that cultural differences influence the memory performance and cognitive aging of Black men. In this sample of Black and White men, there was no difference in actual memory performance, but significant differences were found in the subjective aspects of memory evaluation. The Blacks' lower scores on the subjective aspects of memory (metamemory and memory self-efficacy) may have been in part a result of the anxiety and depression produced from the social constraints they experience. Given these preliminary findings, continued investigation of memory performance among Black men is warranted.

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TABLE 1
Means and Standard Deviations of Demographic Variables

	Blacks (N = 24)		Whites (N = 45)		p
	M	SD	M	SD	
Age	75.96	5.38	77.67	6.25	NS
Chronic conditions	1.46	1.44	1.81	1.44	NS
Education	10.54	2.73	14.31	3.47	<.001
Depression	12.33	8.65	6.69	7.06	<.05
Cognition	26.21	2.50	28.31	1.77	<.001

Note. NS = nonsignificant.

TABLE 2

Means and Standard Deviations of Memory Variables

	Blacks (N = 24)		Whites (N = 45)		p
	M	SD	M	SD	
Appointment	.96	.62	1.24	.68	NS
Belonging	1.33	.76	1.20	.92	NS
Message	1.33	.87	1.07	.89	NS
Name	.96	.91	1.33	.88	NS
Picture recognition	1.79	.59	1.87	.51	NS
Face recognition	1.46	.78	1.49	.82	NS
Immediate route	1.54	.78	1.69	.60	NS
Delayed route	1.58	.72	1.73	.58	NS
Orientation	.79	.51	1.20	.51	.002
Date	1.71	.62	1.87	.41	NS
Immediate story Recall	1.13	.80	1.29	.82	NS
Delayed story recall	1.13	.85	1.33	.80	NS
Memory Perf.-SS	6.42	2.70	7.40	2.56	NS
Memory Perf.-SPS	15.71	5.35	17.31	4.29	NS
Memory self-efficacy	24.09	12.81	36.32	21.30	.012

Note. NS = nonsignificant; SS = screening score; SPS = standardized profile score.

TABLE 3
Means and Standard Deviations of Meta-Memory Variables

	Blacks (N = 24)		Whites (N = 45)		p
	M	SD	M	SD	
Achievement	3.79	.34	3.65	.41	NS
Anxiety	3.31	.57	2.88	.54	.003
Capacity	3.03	.57	3.01	.63	NS
Change	2.50	.56	2.59	.68	NS
Locus	3.39	.47	3.42	.53	NS
Strategy	3.00	.62	3.43	.45	.002
Strategy internal	3.09	.57	3.38	.57	.046
Strategy external	2.91	.81	3.48	.66	.003
Task	3.37	.26	3.90	.27	.017

Note. NS = nonsignificant.