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# Preserving Cognition in Older African Americans with Mild Cognitive Impairment.

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## Abbreviated Title: Cognition in Older African Americans

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**To the Editor:**

Twenty five percent of older adults in the U.S. have type 2 diabetes, which increases their risk for cognitive decline.[1, 2] This risk disproportionately affects African Americans because they have higher rates of diabetes than Whites and worse glycemic control, which magnifies their risk.[3] These disparities contribute to why African Americans have twice the rate of Alzheimer's disease as Whites.[4] There are now 1 million older African Americans with diabetes in the U.S. and their number will double by 2030.[5] This will multiply the burden of cognitive impairment in older African Americans and necessitates preventive interventions.

We are conducting an ongoing randomized controlled trial to test the efficacy of Behavioral Activation to reduce cognitive decline in African Americans with Mild Cognitive Impairment. Behavioral Activation is a standardized, evidence-based treatment that is often used to treat depression.[6] We have uniquely applied this approach to increase participation in physical, cognitive, and social activities in order to preserve cognition. The attention control treatment is Supportive Therapy, which facilitates personal expression but contains no other active elements. Race-concordant community health workers deliver 6 in-home treatment sessions of both interventions. Because of our interest in diabetes and cognition, we examined treatment effects on the subgroup of participants with diabetes who have had 12 month assessments (n = 35).

**Methods:**

At baseline and 12 months (masked to treatment assignment), we administered the Hopkins Verbal Learning Test-Revised Delayed Recall (HVLT) and the Uniform Data Set (UDS) Neuropsychological Battery, which includes tests assessing verbal memory, attention, semantic memory, language, processing speed, visuospatial ability, and executive function. Standardized z scores from the component UDS tests yield the UDS-Composite Score (UDS-CS), which reflects global cognition. Our pilot data indicate that a decrement of 0.45 UDS-CS points translates clinically to the inability to balance a checkbook, do laundry, shop, or prepare meals.

**Results:** The average age of participants was 75.1 years (SD 6.8); 28 (80%) were women. The Table shows that participants who received Behavioral Activation had improved scores over 12 months in 2 cognitive domains: episodic memory (HVLT score) and executive function/processing speed [Digit Symbol Substitution Test (DSST)]. Supportive Therapy controls had no comparable improvements. On the UDS-CS, a greater proportion of participants who received Behavioral Activation compared to Supportive Therapy improved by ≥ 0.45 points [40.0% vs. 21.1%; OR: 2.50 (.55 - 11.33)], and fewer declined by ≥ 0.45 points [6.7% vs. 21.1%; OR: 0.27 (.03 - 2.70)]. There were no significant changes in other neuropsychological test scores.

## Discussion:

The treatment trends observed across three different cognitive measures in this sample of older African Americans with diabetes and Mild Cognitive Impairment suggest that Behavioral Activation may preserve cognition in this high risk group. The sample is small, however, and the analysis is underpowered to detect treatment group differences. Nevertheless, these preliminary findings concur with the results of previous studies indicating that physical, cognitive, and social activity may prevent cognitive decline, and extend these findings now to older African Americans with diabetes.[7] The latter finding is important because the number and longevity of this population, and their risk for progressive cognitive decline and dementia, are increasing.

The Behavioral Activation treatment approach simultaneously targets two entrenched health problems in older African Americans (i.e., diabetes and impaired cognition), and may prevent cognitive decline by increasing cognitive (e.g., problem-solving) and physical (e.g., exercise) activities and perhaps by improving glycemic control. These two mechanisms are plausible because physical and cognitive inactivity, as well as poor glycemic control, increase the risk of cognitive decline.[8,9] Because no disease-modifying treatment for Alzheimer's disease now exists, if an early nonpharmacologic treatment like Behavioral Activation prevents cognitive decline even by one year, it will greatly reduce the personal and societal costs of Alzheimer's disease in older African Americans.[10]

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| Employment or Affiliation | | | | |
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| Patents | | | | |

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| **Personal Relationship** | | | | |

## Author Contributions

**BWR:** Study concept and design; analysis and interpretation of data; and preparation of the manuscript.

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None.

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**Table: Cognitive Scores at Baseline and 12 Months by Treatment Group**

| **Behavioral Activation (n=16)** | **Baseline** | **Month 12** | **paired t** | **df** | **p-value** |
|---|---|---|---|---|---|
| HVLT * | 1.1 (1.7) | 2.9 (2.9) | -2.56 | 15 | .022 |
| DSST | 24.2 (11.7) | 29.6 (11.3) | -2.20 | 13 | .047 |
| **Supportive Therapy (n=19)** | | | | | |
| HVLT | 1.6 (2.0) | 2.6 (2.9) | -1.62 | 18 | .122 |
| DSST | 28.2 (11.5) | 28.8 (12.1) | -.38 | 15 | .708 |

HVLT = Hopkins Verbal Learning Test

DSST = Digit Symbol Substitution Test

* mean; (SD); higher scores indicate better cognitive function.