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The Relationship Between Vascular Function and Cognitive Performance on Alzheimer's Disease Risk

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Background

- Vascular dysfunction and cognitive performance are key determinants of health and may contribute to Alzheimer's Disease Risk (AD).
- These indices vary across sex and race often due to differing biological vulnerability and exposure to chronic stress.
- While vascular and cognitive function are significant variables that impact AD risk, one's perceived discrimination may exacerbate stress and neurocognitive burden.
- Perceived discrimination refers to how an individual perceives and processes encounters with prejudice. This investigation considers how these experiences may impact the health of populations differently.

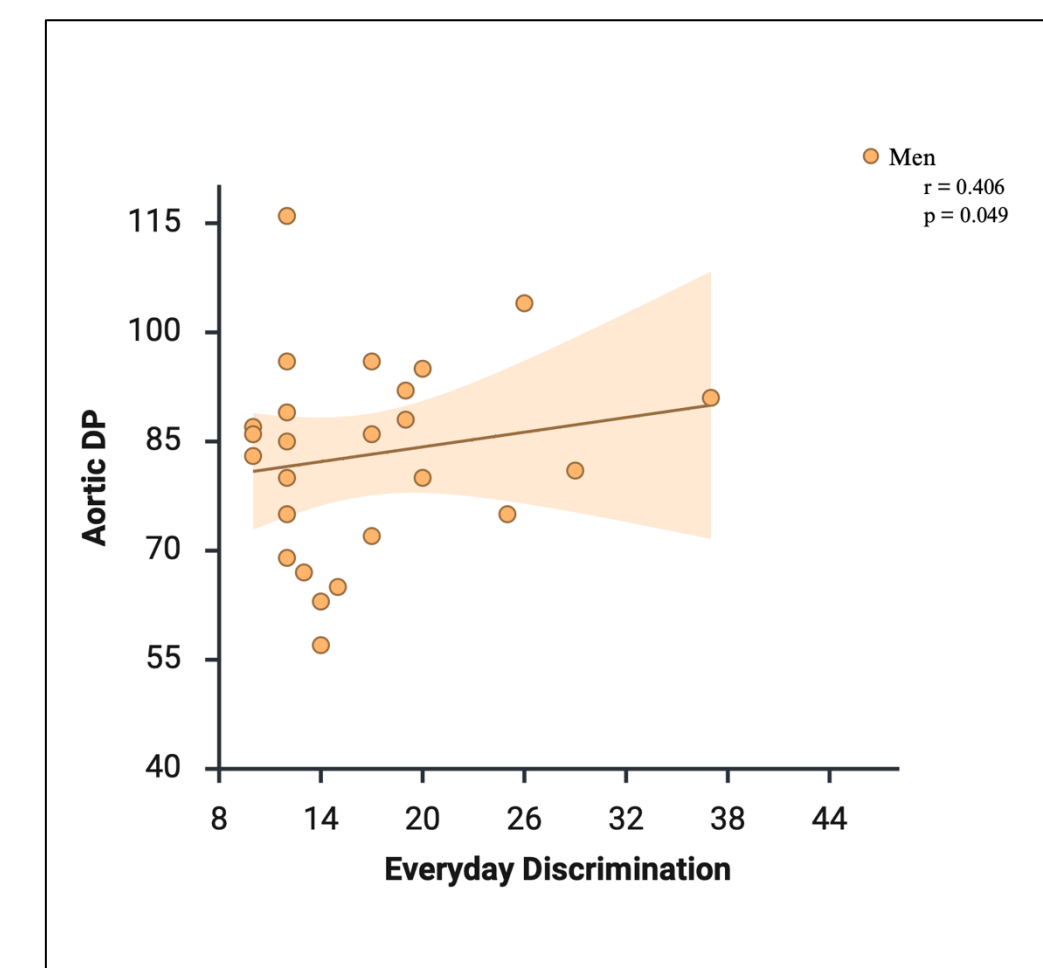
Purpose

The purpose of this investigation is to evaluate how vascular and cognitive outcomes relate to Alzheimer's Disease through perceived discrimination and increased stress.

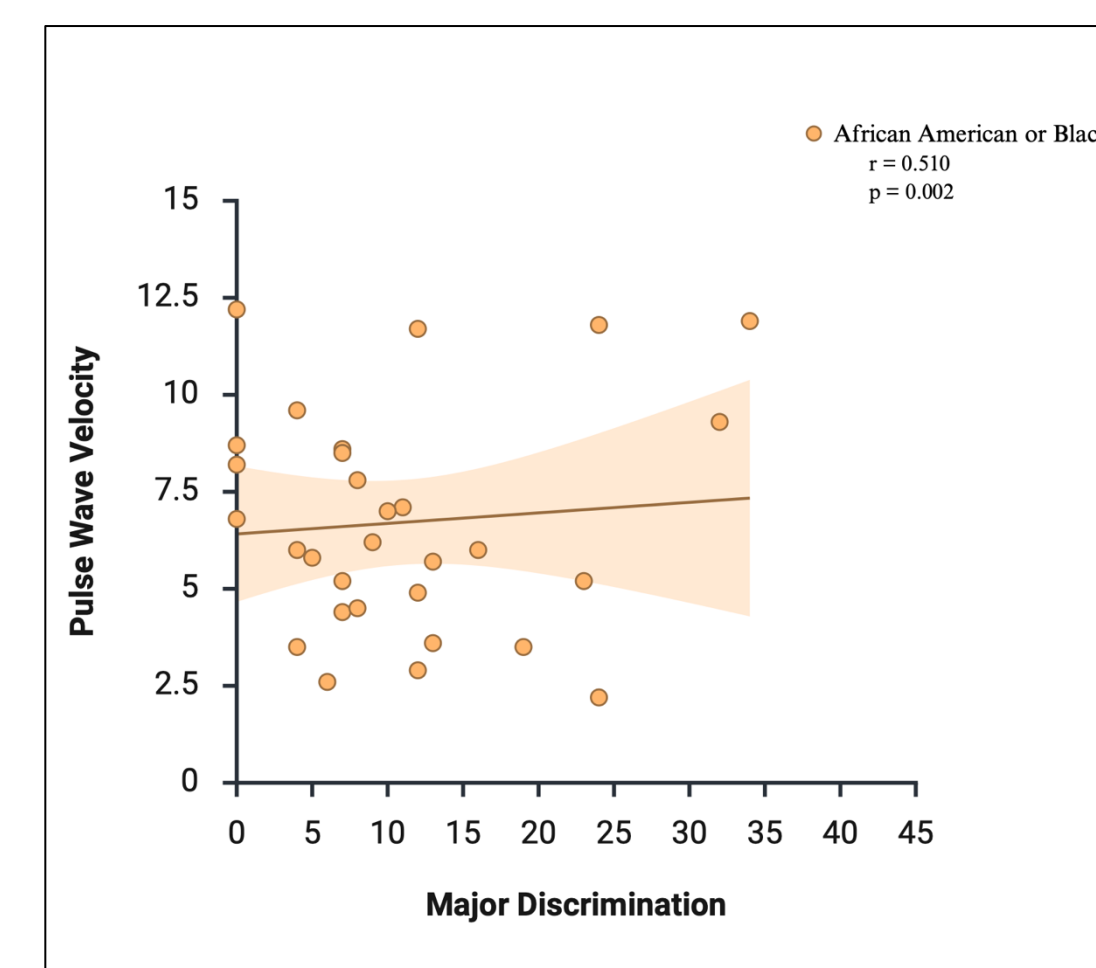
Methods

- A community-based, racially diverse sample of cognitively unimpaired adults (N=99, 32-84 years) were enrolled.
- One third of the participants reported family Alzheimer's Disease and Related Dementias history (ADRD).
- Cognitive performance included domains of executive function, working memory, and visuospatial ability.
- Arterial stiffness was measured using pulse wave velocity (PWV).
- Perceived discrimination (Everyday, Chronic Work, Major, and Heightened Vigilance) was self-reported.
- Statistical Analyses included t-tests, Pearson correlations, and linear regression analyses.

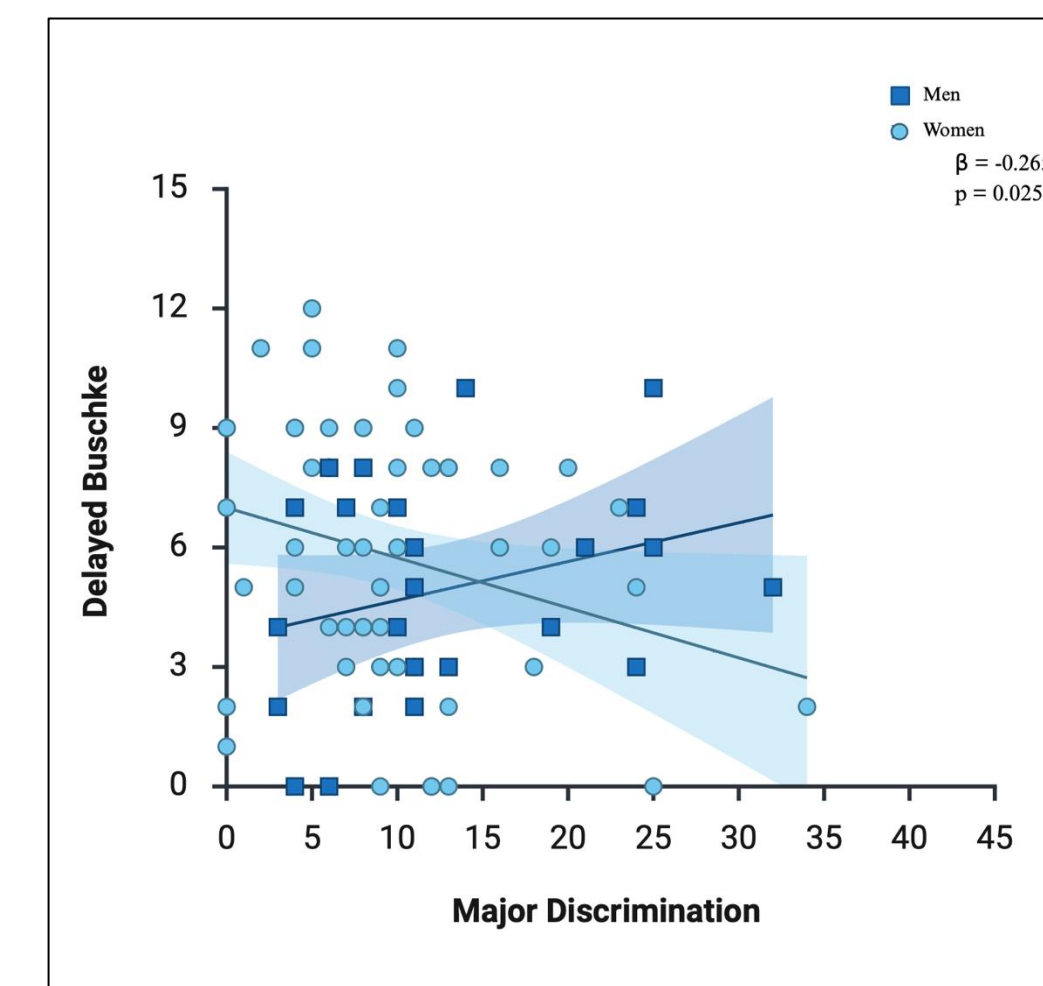
Results



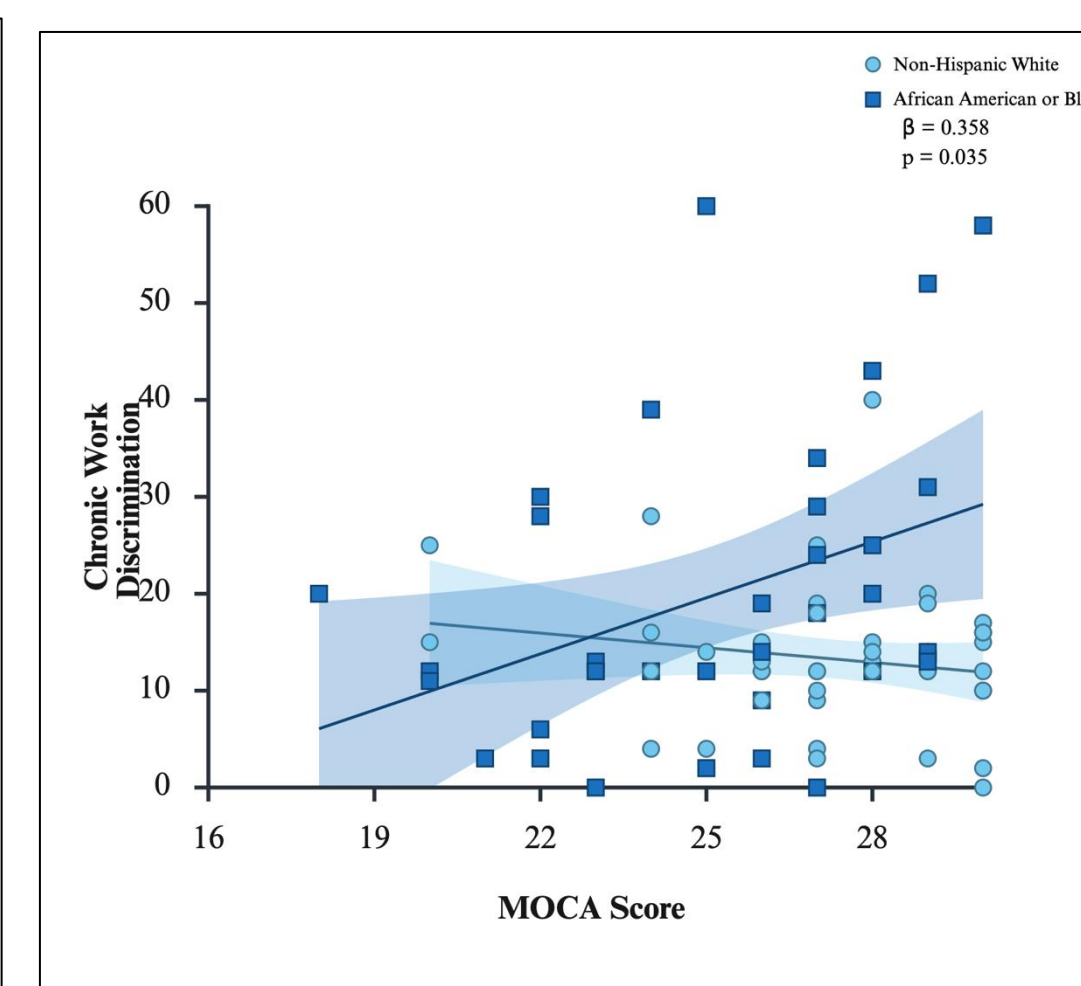
Everyday Discrimination & Aortic DP
• *Men



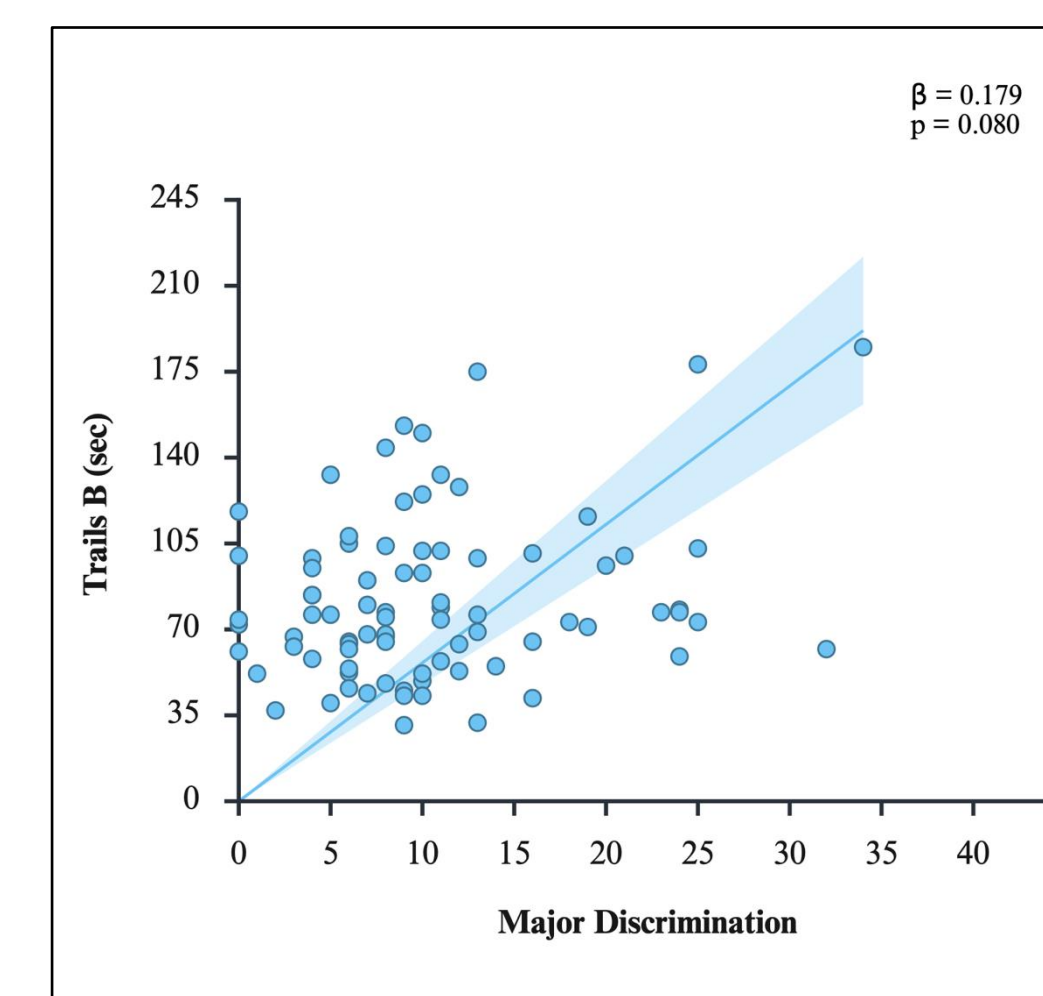
Major Discrimination & Pulse Wave Velocity
• *African American/Black



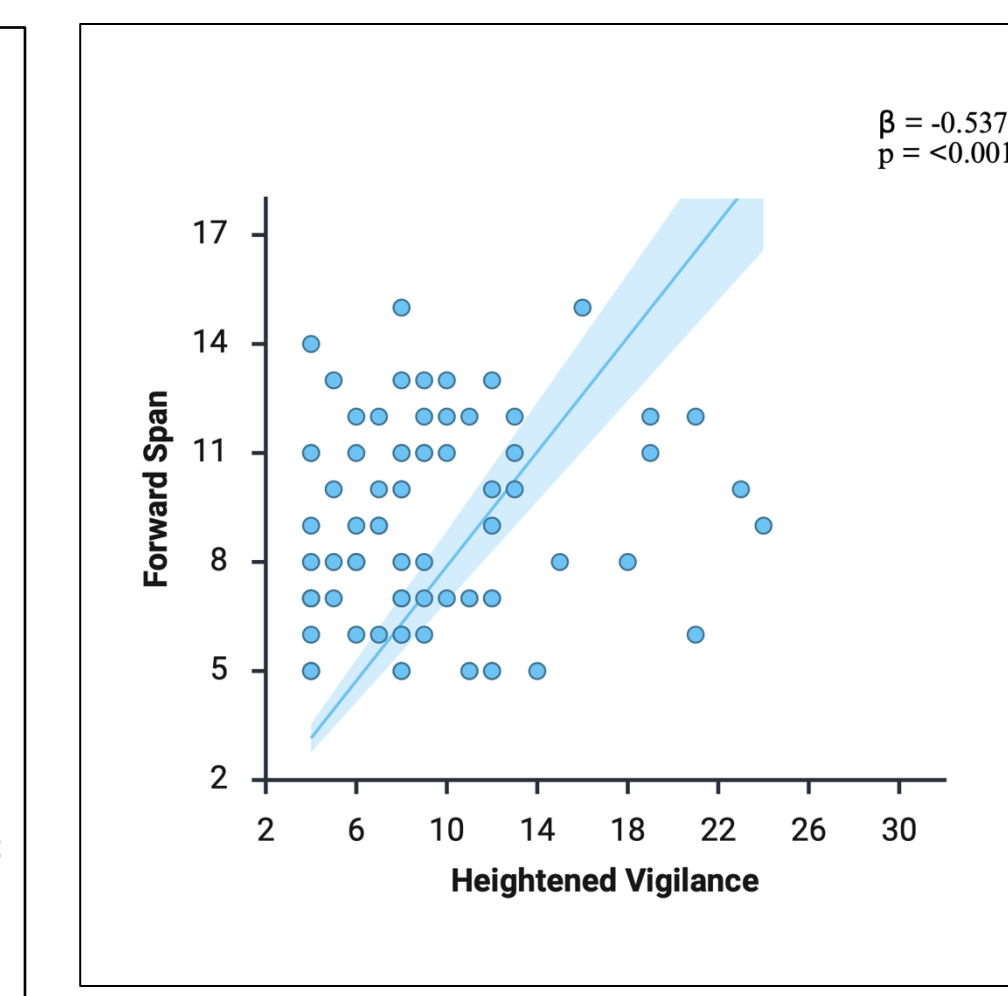
Major Discrimination & Delayed Buschke
• *Women vs. Men



MOCA & Chronic Work Discrimination
• *African American/Black vs. White



Major Discrimination & Trails B
• *Women



Heightened Vigilance & Forward Span
• *African American/Black

Vascular Measures and Discrimination

Everyday discrimination significantly correlated with higher Aortic DP in males. ($r = 0.406$, $p = 0.049$)

Major discrimination was associated with higher PWV with Black participants. ($r = 0.510$, $p = 0.002$)

Cognition and Discrimination

Major discrimination correlated with poorer delayed buschke performance. ($r = -0.265^*$, $p = 0.042$)

Higher MOCA scores trended towards greater reported chronic work discrimination among Black participants. ($r = 0.406$, $p = 0.049$)

Major discrimination was associated with a longer completion time on Trails B. ($r = -0.265^*$, $p = 0.031$)

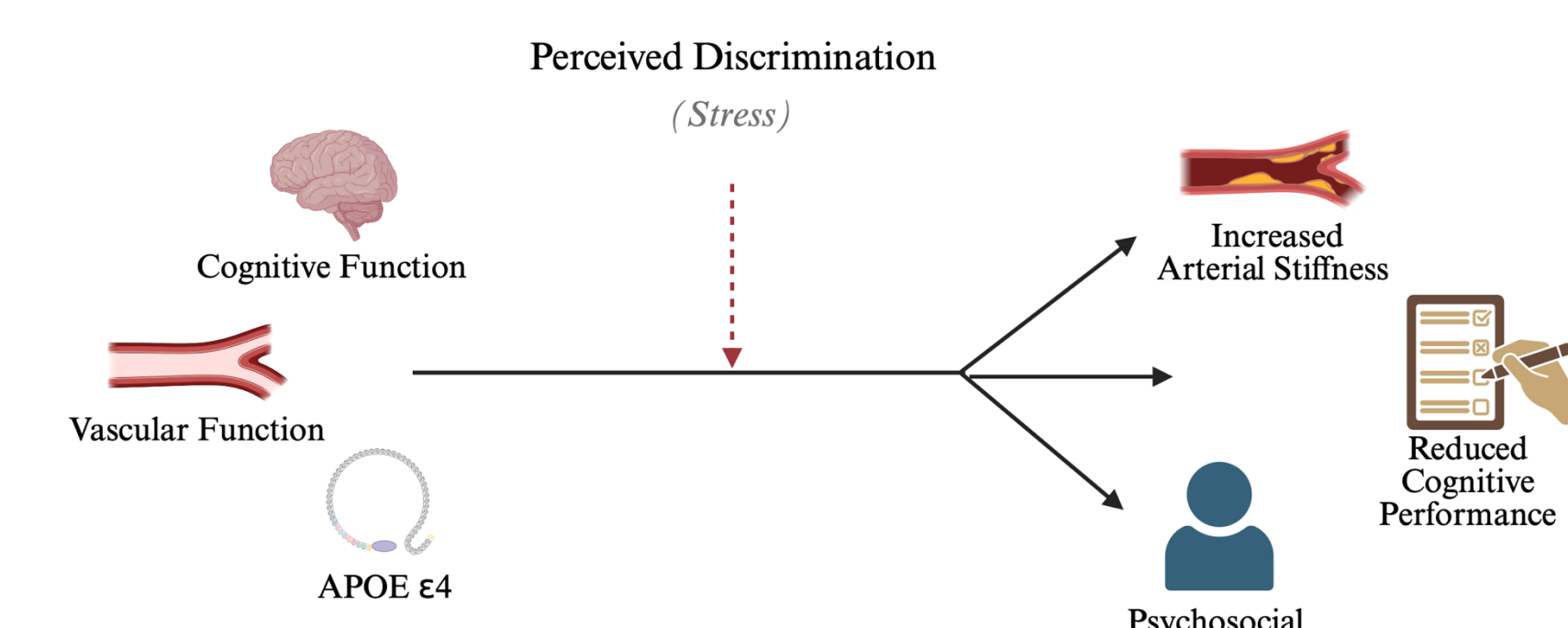
Heightened vigilance was associated with lower forward and backward digit span. ($r = 0.358^*$, $p = 0.035$)

Demographics

Sample Population	Mean $\pm$ SD
Age (years)	65 $\pm$ 10
Women	68%
African American or Black	42%
APOE4+	42%
Cardiovascular Disease	55%
Pulse Wave Velocity (m/s)	6.58

Discussion

- Discrimination related to several domains that are affected early in AD:
 - Higher ambulatory pressure in Males
 - Higher arterial stiffness in Black participants
 - Greater overall burden in certain groups
- These findings support discrimination as a stress related factor that may contribute to AD risk through cognitive and vascular mechanisms.



Funding

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