

Allostatic Load and Physical and Cognitive Function in Foreign-born Hispanic/Latino Adults

A Longitudinal Community Study

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KEY TAKEAWAY: In 200 foreign-born Hispanic/Latino adults followed over 3 waves, allostatic load (AL) showed a significant dose–response relationship with global cognition, a 0.42 SD gap between high and moderate AL ($F = 9.37$, $p < 0.001$). Cumulative physiological stress may be a modifiable target for cognitive health in immigrant communities.

INTRODUCTION

The disparity

Hispanic/Latino adults experience disproportionate rates of cognitive decline and dementia, yet the mechanisms underlying these disparities remain poorly understood.

The mechanism

Allostatic load (AL), cumulative physiological dysregulation from chronic stress may explain accelerated physical and cognitive aging.

The gap

Evidence linking AL to both physical and cognitive functioning in middle-aged, foreign-born Hispanic/Latino populations is limited.

Objective

Examine associations of AL with physical and cognitive function and test for dose–response patterns.

METHODS

Design & sample

200 community-dwelling, foreign-born Hispanic/Latino adults on Eastern Long Island, New York, assessed over 3 waves. Mean age 51.5 ± 12.3 years; 53% female; education 10.1 ± 4.6 years; 17.6 ± 12.1 years in the US.

Allostatic load

13 biomarkers across cardiovascular, metabolic, and inflammatory systems (range 0–9; mean 3.1 ± 1.8), categorized as low (0), moderate (1–2), or high (≥ 3).

Outcomes

Physical : hand grip strength, 2-minute walk speed, pegboard dexterity.

Cognitive : NIH Toolbox Cognition Battery.

Analysis

Linear regression models examined AL associations with outcomes, adjusting for sex and education. Dose–response patterns were evaluated using ANOVA.

RESULTS

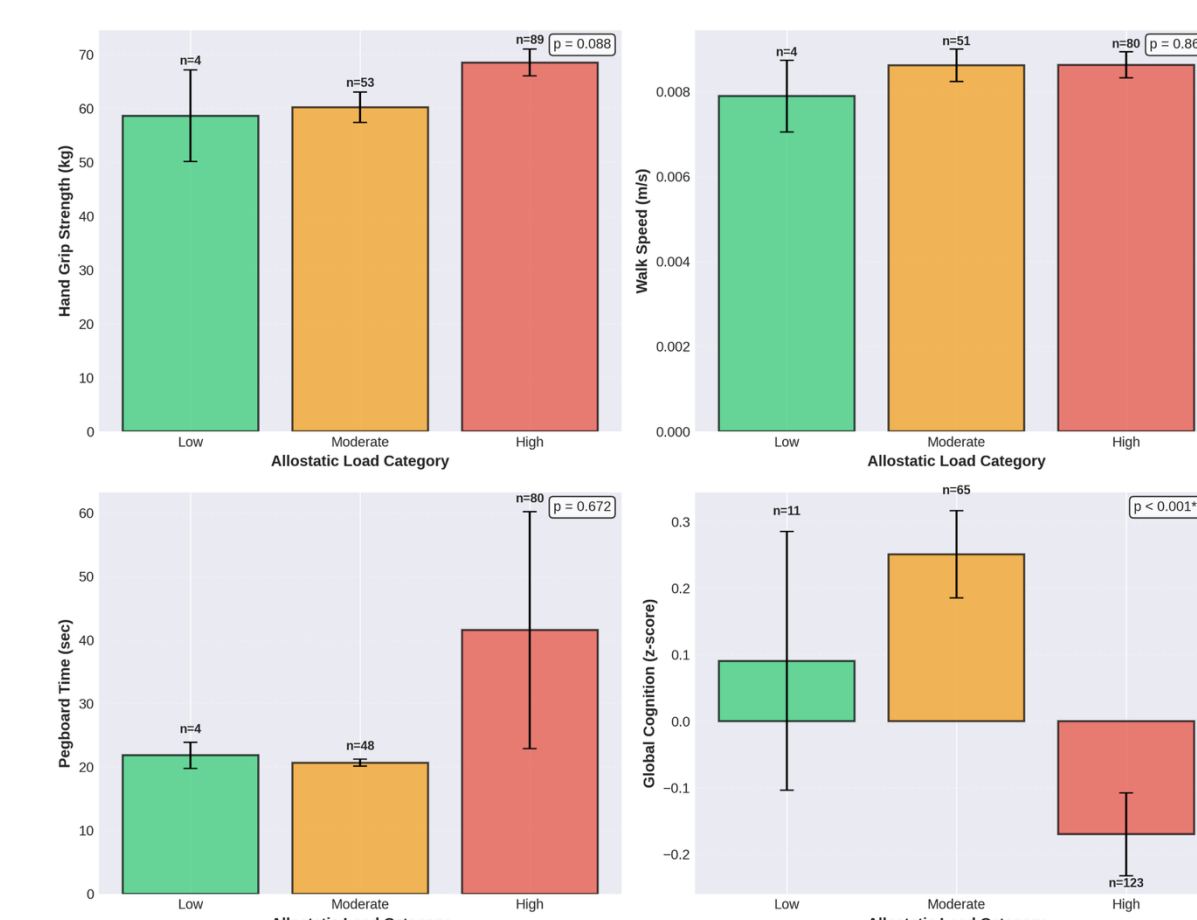


Figure 1. Dose–response in physical and cognitive function by allostatic load category ($N = 200$). Global cognition declines at high AL; physical measures show inconsistent patterns.

Cognition High AL showed significantly worse global cognition (mean $z = -0.17$) than moderate (0.25) and low (0.09) AL — ANOVA $F = 9.37$, $p < 0.001$, a 0.42 SD difference.

Higher AL trended toward worse cognitive function ($\beta = -0.046$, $p = 0.056$, $n = 196$), strongest for working memory ($\beta = -0.072$, $p = 0.067$).

Physical function Patterns were inconsistent ($n = 132$ – 146). Grip strength was unexpectedly higher in the high-AL group (68.5 vs. 60.2 moderate, 58.6 low), likely reflecting sex differences. Pegboard dexterity trended worse with higher AL ($\beta = 11.3$ sec, $p = 0.117$).

CONCLUSIONS

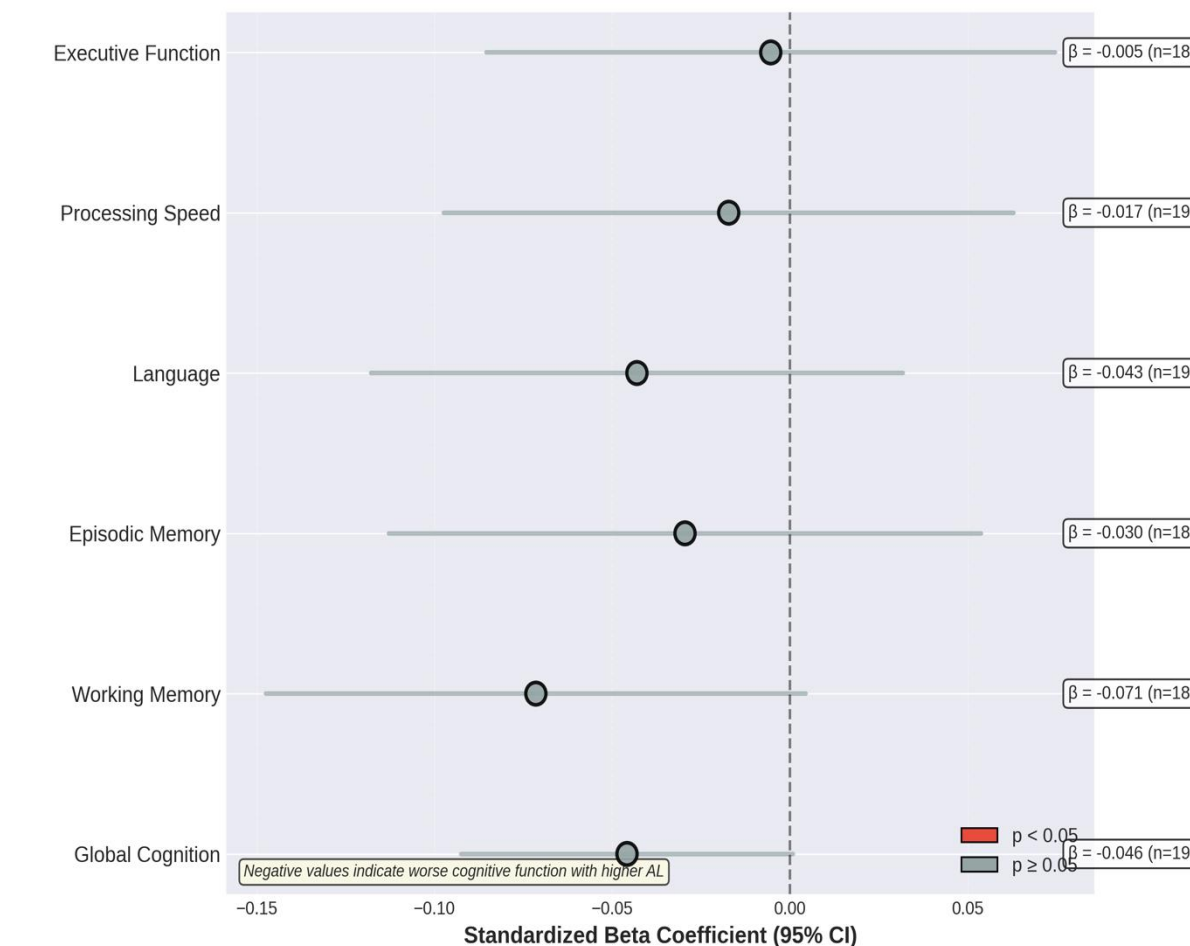


Figure 2. Association between allostatic load and cognitive function ($N = 200$, adjusted for sex and education). Negative coefficients indicate worse cognition with higher AL.

Novel evidence of a significant dose–response relationship between AL and cognitive functioning in middle-aged, foreign-born Hispanic/Latino adults.

Supports AL as a mechanistic pathway linking chronic stress to cognitive aging in younger immigrant populations.

Inconsistent physical function associations may reflect domain-specific AL effects or confounding by sex and age warranting further investigation.

Cumulative physiological stress may be a modifiable target for cognitive health interventions in underserved communities.

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