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EPIDEMIOLOGY

Changes in neighborhood disadvantage over 18 years contributes to racial disparities in later-life cognition

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Abstract

Background: Neighborhood disadvantage (NDis) is a well-studied contextual and local indicator of Black-White health disparities, including cognitive health. Trajectories of NDis are less commonly studied but may be important for understanding how investment and disinvestment in neighborhoods with predominately Black residents may contribute to disparities in cognitive aging. This study characterizes 18-year trajectories of NDis and examines whether trajectories of NDis mediate Black-White disparities in cognitive function.

Method: This study of 480 non-Hispanic Black (NHB) and White (NHW) older adults (M_{age} = 63.9; 55% Black) were drawn from the Michigan Cognitive Aging Project (MCAP), a regionally-representative, prospective longitudinal study of older adults in the Detroit metropolitan area. Participants' current addresses were geocoded and linked to historical neighborhood data from the National Neighborhood Data Archive (NaNDA). Yearly measures of NDis from 2000 to 2017 reflect a composite of four indicators of disadvantage (proportions of: female headed families with children; households with public assistance; families below the federal poverty level; adults unemployed). First, a latent class growth analysis (LCGA) was used to determine distinct types of 18-year NDis trajectories across 1,344 census tracts in the six counties represented in the sample. Next, path analysis was used to quantify the extent to which the identified classes of NDis trajectory mediated the association between race and global cognition, which was operationalized as a composite of five cognitive domain factor scores (i.e., episodic memory, executive function, processing speed, language, and visuospatial ability). Mediation models adjusted for age, sex/gender, and education.

Result: LCGA indicated three classes of NDis trajectories: persistently high disadvantage (PHD: 9%), high and increasing disadvantage (HID; 16%), and persistently low disadvantage (PLD; 75%). NHB participants were more likely to live in PHD or HID neighborhoods, which were each associated with worse global cognition. NDis trajectories explained 12% of the Black-White disparity in global cognition. HID was a stronger mediator of cognitive disparities than PHD.

Conclusion: Disinvestment in neighborhoods may contribute to racial disparities in global cognition among adults transitioning to late life. This study highlights the value

of examining risk and resilience factors at the neighborhood level in research on ADRD inequalities.
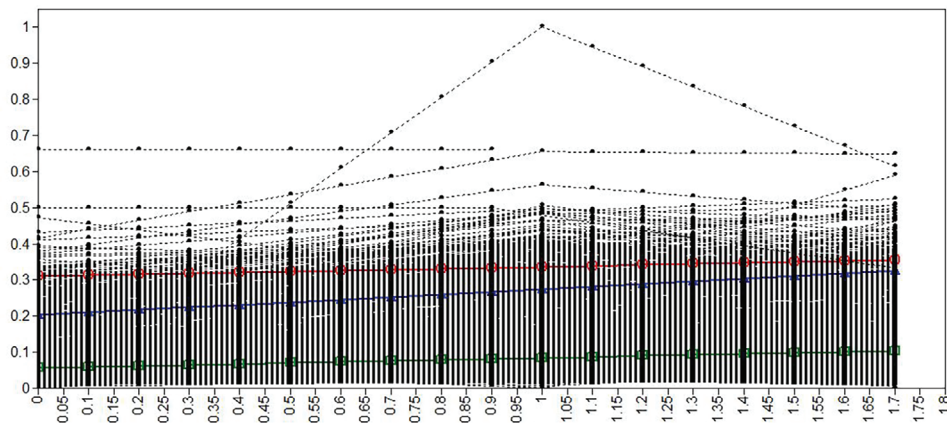
Standardized estimates of global cognition in regression and path analyses			
	β (SE)	p	95% CI β
	Regression analysis		
Age	-.16 (.04)	<.001	-.22 , -.09
Male	-.05 (.03)	0.160	-.11, .01
Years of education	.33 (.04)	<.001	.27, .39
Black race	-.40 (.04)	<.001	-.46, -.33
Class: PHD	-.08 (.04)	0.045	-.14, -.01
Class: HID	-.13 (.04)	0.001	-.19, .06
Total	-.45 (.04)	<.001	-.51, .40
	Path analysis of Black race-Cognition association		
Total indirect	-.05 (.02)	0.002	-.09, -.03
Specific indirect: PHD	-.02 (.01)	0.062	-.03, -.00
Specific indirect: HID	-.04 (.01)	0.004	-.06, -.02
Direct	-.40 (.04)	<.001	-.46, -.33
PHD=persistently high disadvantage; HID: high and increasing disadvantage			