

## Job Strain and Late-Life Cognition: Findings from the Puerto Rican Elderly Health Conditions Study

### **BACKGROUND**

Previous research studies have shown an inverse relationship between job strain and cognition, where more job strain was associated with worse cognitive function. A limitation of these findings is that these studies were conducted in countries with relatively favorable socioeconomic conditions such as the mainland U.S., Germany, France, and Sweden, and are therefore not generalizable to workers in countries like the commonwealth of Puerto Rico. Research on people living in Puerto Rico is especially important because socioeconomic and health related disparities ultimately affect their cognitive health outcomes. In addition to this, Puerto Rico has been slow to adopt U.S. policies like compulsory schooling for children which has resulted in a less educated population. There is evidence that suggests having less education may exacerbate negative changes associated with cognitive health. As a result of all these factors, Puerto Rican older adults may be prone to experiencing increased cognitive decline. The primary objective of the current study was to investigate how job strain relates to change in late-life cognition in older adults in Puerto Rico and whether this change can be attenuated by education level.

### **STUDY METHOD**

*Measures.* The participants in the present study were members of the longitudinal, Puerto Rican Elderly: Health Conditions (PREHCO) study. This population-based study included two waves; the

first began between 2002 and 2003 and the second was from 2006 to 2007. There was a total of 1,632 participants whose cognition, occupational history, and job strain were measured at baseline and at follow-up.

Cognition was assessed using the Mini-Mental Caban (MMC) which gauged numerous cognitive processes (i.e., time-orientation, verbal memory, visual memory, visuospatial/executive function, abstraction, comprehension). Occupational history was documented as the longest held gainful occupation of at least 10 years. Job strain was measured through two independent variables: (1) job demands, to assess work responsibilities and (2) job control, to assess decision authority in meeting those work responsibilities. Two occupation-based measures, the Occupational Information Network and the Job Content Questionnaire, were used to gather information on job strain which gave researchers an idea of the demands and control for certain occupations. Finally, the covariates included in these analyses were depressive symptoms, childhood and current economic situations, self-rated health, presence of diabetes and hypertension, and years of education.

*Analytic method.* Linear regressions were used to examine cognitive changes between the participants at the first and second wave. Two regressions were run for the first research question. The first with job demands and job control as independent variables and the second with job strain as the independent variable. The second research question regarding education was

explored by evaluating the interaction between job strain indicators and educational attainment. To supplement this analysis, gender was assessed as a potential moderator between job strain and cognitive decline.

## **FINDINGS**

The findings suggest that lower job control and greater job strain may contribute to the cognitive decline of older adults in Puerto Rico. This association, however, was found to be substantially moderated by educational attainment. Specifically, job strain indicators were most strongly associated with cognitive decline in those with at least 8 years of education. These individuals experienced greater cognitive decline when having heightened job strain and low job control. This emphasizes the influence of the work environment in those with more education.

A supplemental analysis was conducted to test whether the results could be replicated when assessing job strain indicators in relation to cognitive performance at follow-up only. The relationship between job strain, job control, and cognitive performance were consistent with the results from the primary analysis and gender did not seem to moderate between job strain or job control and late-life cognitive decline.

## **POLICY IMPLICATIONS**

The current study represents one of the first studies to assess the relationship between job characteristics and cognitive changes in this less commonly studied and vulnerable population of older adults living in Puerto Rico. The findings

suggest that low job control and high job strain were associated with greater declines in cognitive performance from baseline to follow-up. Educational level was an important predictor of one's cognitive decline trajectory. Since this study did not account for career changes and only looked at the occupation that individuals spent the most time in, future research should focus on obtaining a more detailed occupational history. Future studies should also examine the impact of life course factors, such as education and employment type, on cognitive aging among adults from various backgrounds. Policy makers need to focus on providing ample educational opportunities and improving the public education system to increase retention rates. Business owners should also give employees more autonomy in their jobs and promote a collaborative environment, where their opinions and suggestions can be considered.

## **Original Article**

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