



Introduction

- Alzheimer's Disease and Related Dementias (ADRDs) are among the fastest-growing, most disabling, and most expensive health conditions affecting older adults and their families in the United States.
- Challenging early life conditions (e.g., childhood poverty) during critical brain development phases have been associated with poorer cognitive function in late adulthood (Roberts et al., 2022; Ryan et al., 2019; Short & Baram, 2019; Tjoelker et al., 2022).
- Moreover, hazardous and enriching occupational environments during midlife further shape late-life cognitive function (Niedhammer et al., 2021; Then et al., 2014).
- The health risks and benefits of occupational environments are gendered. For instance, more physically demanding jobs are traditionally male-dominated with higher exposure to physical hazards, toxins, and injuries.
- It is unclear whether and how the cognitive impact of occupational environments differs across genders.

Research Question

- To inform occupational policies and interventions, we explore how occupational environments (i.e., occupational complexity and hazards) are associated with late-life cognitive function and whether associations differ by gender, accounting for early-life factors.

Methods

- Analysis:** Ordinary Least Squares (OLS) regression with interaction terms was conducted in Stata.
- Data:** Health and Retirement Study (HRS) data (waves 2004-2016) and HRS-linked Occupational Information Network (O*NET) data stacked based on age.
- Sample:** Age 51-60 at entry in HRS study; employed with linked O*NET data, have valid cognitive outcome data.
- Main measures:**
 - Cognitive function score:** Later life cognitive function is measured by a sex-adjusted score at participants' last wave of cognition data in HRS (available for the 2004-2016 waves) (Hudomiet et al., 2022). A cognitive function score below 0 indicates dementia; a cognitive function score between 0 and 1 indicates cognitive impairment, not dementia; and a score above 1 indicates normal cognition.
 - Early life factors:** Include poor relationship with mother (0,1), self-rated low childhood SES (0,1), self-rated poor childhood health (0,1), and father with no high-school degree (0,1). A score of 1 indicates an adverse early life experience.
 - Total Occupational Complexity:** Standardized sum of thinking creatively, freedom to make decisions, frequency of making decisions, making decisions and solving problems, coaching and developing others.
 - Total Occupational Hazard:** Standardized sum of using hazardous equipment, exposure to high places, extremely bright or inadequate lighting, very hot or very cold temperatures, and cramped workspaces.

Results

Regression Coefficients for the Interaction Between Gender and Standardized Occupational Environments with and Without Controlling for Early Life Factors, Women Relative to Men

<i>Work Context Variables</i>	<i>Without Early Life Factors</i> (N = 1135)	<i>With Early Life Factors</i> (N = 1007)
Total Occupational Hazards	0.06*	0.06*
Exposed to high places	0.04	0.04
Exposed to hazardous equipment	0.08**	0.09**
Extremely bright or inadequate lighting	0.02	0.02
Cramped workspace, awkward positions	0.07*	0.07*
Very hot or cold temperatures	0.03	0.03
Total Occupational Cognitive Complexity	-0.13**	-0.13**
Frequency of decision making	-0.02	-0.02
Freedom to make decisions	-0.07*	-0.07*
Coaching and developing others	-0.09**	-0.09**
Making decisions and solving problems	-0.08**	-0.08**
Thinking creatively	-0.07*	-0.06*

Note. We controlled for base year, age at the last cognition, gender, race, marital status, baseline cognitive function, baseline depressive symptoms, and years of education in the model. Each occupational complexity or hazard item was standardized.

Discussion and Conclusion

- Total cognitive complexity of work at baseline was associated with better cognitive function whereas the total occupational hazards were associated with poorer cognitive function at age 65 or older.
- Test of interaction indicates that exposures to cognitively complex occupational environments were associated with significantly better cognitive function among men but not among women. Similarly, exposures to hazardous occupational environments were associated with significantly worse cognitive function among men.
- Accounting for early life factors did not change the significance of the interaction between gender and occupational environments.
- Future research can evaluate what aspects of occupational environments at which life stages impact cognitive health across genders.

