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The Effect of Physical and Cognitive Decline at Older Ages on Work and Retirement: Evidence from Occupational Job Demands and Job Mismatch

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As workers age, their cognitive and physical skills diminish. Yet these skills do not diminish uniformly for workers over time. The dependence workers have on these skills may also vary. Those in jobs demanding cognitive skills may not, for example, see their work prospects diminish as their physical skills do.

Still, as workers' skills diminish, they may develop a mismatch with their jobs. That is, the skills they keep may not match those still demanded by their job. This can affect the employability of workers as they age. As the skills mismatch grows, workers might increase effort to compensate, but this can cause health problems. They also might switch jobs, reduce hours, or retire earlier than planned.

Understanding how mismatch can affect older workers' employability is important for many reasons. It can inform policies to promote continued employment, perhaps through part-time work. This can reduce pressures on programs such as Social Security or Medicare.

We assess possible growth in mismatch between skills and job demands for older workers. To do so, we analyze data from the Health and Retirement Study (HRS) on personal skills and the O*NET database on job demands. We pair

- O*NET measures on dynamic strength with HRS measures on physical strength;
- O*NET measures on finger dexterity with HRS measures on fine motor skills;
- O*NET measures on memorization with HRS measures on cognitive resources;
- O*NET measures on data analysis with HRS measures on cognitive resources.

Mismatch occurs when the demands of a job do not match the skills of a worker. For example, a worker in a job demanding dynamic strength who loses physical strength is in a mismatched job. Yet losing physical strength may not create mismatch for workers in jobs demanding cognitive skills.

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We conducted both descriptive and regression analyses of workers 50 to 70 years old responding to the HRS from 1994 to 2014. We sought to identify

- an increase in reported work-limiting health problems as an indicator of increased mismatch between skills and job demands;
- growth in depressive symptoms signaling increased strain on the job;
- decreases in self-reported expectations of working past age 65, which are strong predictors of subsequent retirement behavior;
- increases in dislike of work.

The results for jobs demanding physical strength are particularly striking. Among individuals who maintain large-muscle strength, there are very few work-limiting health problems. Such workers also do not report more depressive symptoms over time.

Among those for whom physical strength diminishes, job mismatch increases. This is particularly true for workers in physically-demanding jobs. Depressive symptoms also increase, while expectations of working past age 65 decrease.

Job mismatch increases as well for persons for whom fine-motor skills decline. Changes in fine-motor skills lead to more work-limiting health problems, more depressive symptoms, and lower expectations of working past age 65. These trends appear strong for all workers, and not limited to those for whom fine-motor skills are necessary.

Decline in cognitive skills has rather similar effects on all workers. It predicts health limitations at work, more depressive symptoms, and lower expectation of working past age 65. These declines are similar for workers who need and do not need such skills; and the effects tend to be smaller in magnitude than the effects of physical decline. This suggests workers in cognitive jobs may rely on general knowledge and experience that is more resistant to aging. Regardless, decline in cognitive skills is less of a problem for older workers than decline in physical skills. We found that physical decline predicts dislike of work, but cognitive decline does not. Measures of decline also have some effect on discontinuing work, not just expectations of doing so.

Different jobs rely on different skills. Our work demonstrates the need to consider heterogeneity in both individuals' skills and job demands. By considering both, we can identify employment mismatches. Workers in physically demanding jobs, for example, may benefit from policies facilitating longer work lives that addressed their particular needs. Currently, such workers are very likely to leave the labor force.

Our work has some limitations. The job-demand measures ignore variation within an occupation. Changes in occupational coding over time also may affect our results. The physical-skill measures may be too general and focus on declines more often observed in older persons than we consider. Finally, for many workers, particularly those surveyed before 2006, we had to impute some variables. Future research may benefit both from more data and more sophisticated imputation methods.

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