# INTERVENTIONS IN THE WORKPLACE

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University of Minnesota
January, 2025

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## Today…

I. Dislocations Upending Paid Work and Cognition
II. Research Evidence
   A. Job Conditions and Cognitive Functioning
   B. Job Conditions and Risks/Protective Factors Predictive of AD/ADRD
III. What We Need to Know

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**Slide 2**

**PM0** Can you put one with lots of people to replace the picture here? And use that one for all the Today slides….this will be on people's computers so doesn't need to be so big, which is why I made font smaller

Phyllis E Moen, 2025-01-05T14:16:28.970

# Today…

I. **Dislocations Upending Paid Work and Cognition**

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# Dislocations ….

Unprecedented Technological, Demographic, Economic, Political, Other Upheavals Affecting Work and Cognitive Functioning

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## The Second Machine Age

(Erik Brynjolfsson and Andrew McAfee 2014)

- First: Development of Steam Engine
  - Machines augmented physical power
- Second: Development of Computers
  - Digital technologies augmenting mental power
- Now? Machine Learning AI technologies mimicking the way humans think, learn, perform

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## Why Work Matters

- Work = Durable arrangements that organize experience
- Work is groundwork for daily living as well as earning a living – but also exposure life stresses which can affect cognitive ability
- Work is engine of human development, but also cumulative inequality across the life course

**"Durable" arrangements in flux –contract work, flexible schedules, remote/hybrid work, 4-day workweek, AI, unstable and uncertain work/retirement paths**

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## Today…

I. Dislocations
II. Evidence

**Few Randomized Studies of Interventions, Some Natural Experiments, Many Observational Studies** (problematic for direction of causality)

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## Today…

I. Dislocations
II. Evidence
   A. Employment and Cognitive Functioning

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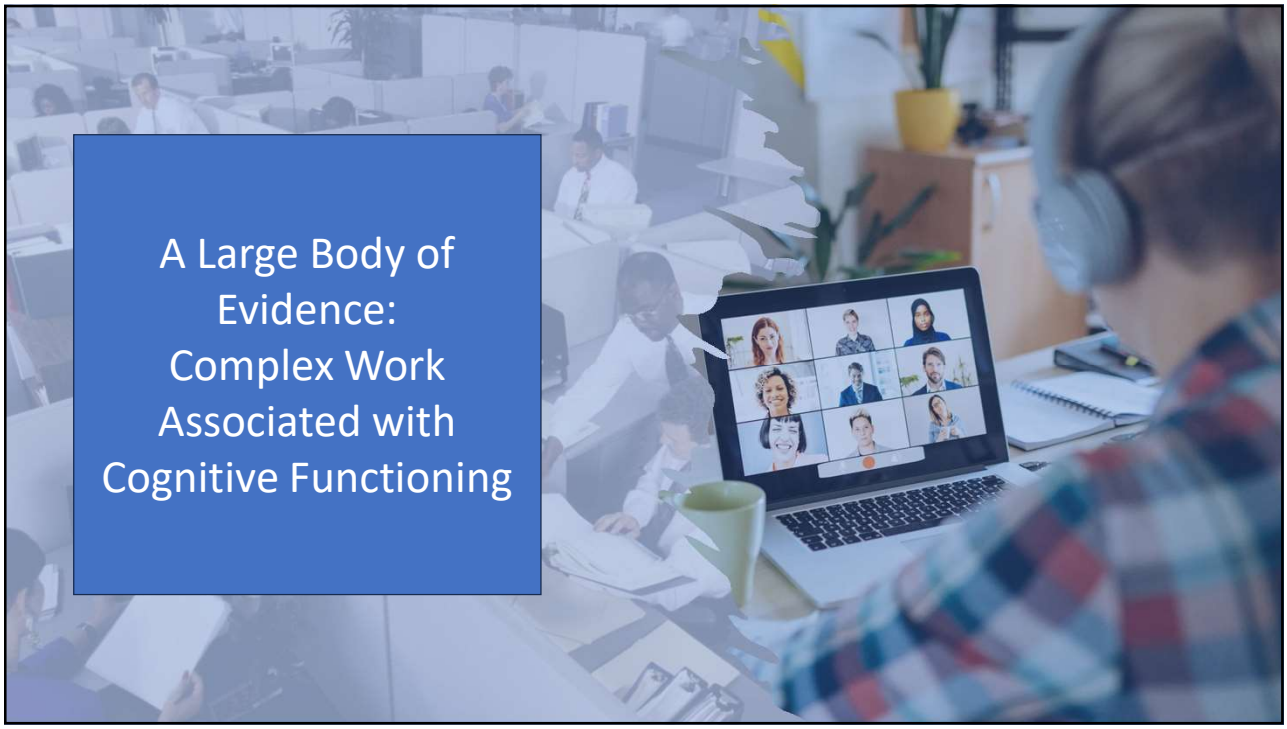


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## Complex, Demanding Work Matters

- Higher mental and social demands of work associated with higher levels of initial cognitive functioning, but no effects over time
- Physical work demands of work negatively linked to cognitive functioning (Lee et al 2022 HRS)

Lee, Yeonjung Jane, Ernest Gonzales, and Ross Andel. 2022. "Multifaceted Demands of Work and Cognitive Functioning: Findings From the Health and Retirement Study" edited by V. Taler. *The Journals of Gerontology: Series B* 77(2):351–61. doi: 10.1093/geronb/gbab087.

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Retirement a Risk Factor?
In low complexity jobs:
All retirement pathways associated with accelerated cognitive decline for workers in low complexity jobs.
In high complexity jobs:
Retirement not associated with accelerated cognitive decline
Returning to work:
associated with modest improvement in cognitive functioning."

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A Large Body of Evidence:
Job Strain (High Demands/Low Control) Associated with Cognitive Functioning

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## Job Strain Related to Memory(HRS)

Job strain -- mainly as low job control -- linked to poorer episodic memory at retirement and more decline after retirement. (Andel et al. 2015 -- HRS)

Andel, Ross, Frank J. Infurna, Elizabeth A. Hahn Rickenbach, Michael Crowe, Lisa Marchiondo, and Gwenith G. Fisher. 2015. "Job Strain and Trajectories of Change in Episodic Memory before and after Retirement: Results from the Health and Retirement Study." *Journal of Epidemiology and Community Health* 69(5):442–46. doi: 10.1136/jech-2014-204754.

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## Susan:

*"The course of action was unclear, I felt paralyzed…I likened this to living in a black and white postcard; nice picture, but dull, cold, and inhibiting."*

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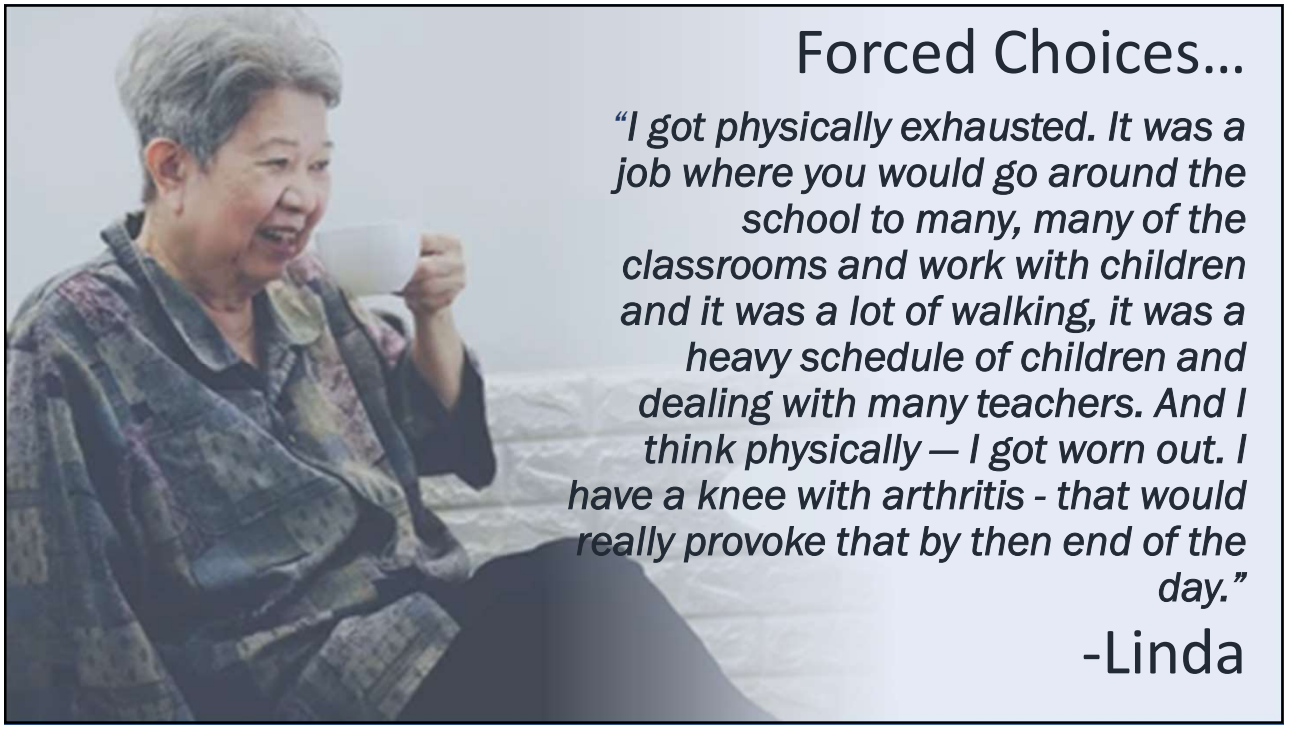
# However, Some Studies Suggest Retirement Reduces Effects of Job Strain

Greater job strain may have a negative influence on overall cognitive functioning prior to and at retirement, while interrupting exposure to job strain (postretirement) may slow the rate of cognitive aging

(Swedish Adoption/Twin Study of Aging, Nilsen et al. 2021)

Nilsen, Charlotta, Monica E. Nelson, Ross Andel, Michael Crowe, Deborah Finkel, and Nancy L. Pedersen. 2021. "Job Strain and Trajectories of Cognitive Change Before and After Retirement" edited by V. Taler. *The Journals of Gerontology: Series B* 76(7):1313–22. doi: 10.1093/geronb/gbab033.

15



# Forced Choices…

*"I got physically exhausted. It was a job where you would go around the school to many, many of the classrooms and work with children and it was a lot of walking, it was a heavy schedule of children and dealing with many teachers. And I think physically — I got worn out. I have a knee with arthritis - that would really provoke that by then end of the day."*

-Linda

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# Today…

I. Dislocations

II. Evidence

A. Employment and Cognitive Functioning

B. Job Conditions, Risks/Protective Factors Predictive of AD/ADRD

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# Work, Family and Health Network (WFHN): An Interdisciplinary Randomized Field Trial

**Supporting Partners**
**The Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD)**
Rosalind Berkowitz King, Project Scientist
U01 HD051256

**Centers for Disease Control & Prevention (CDC)/ National Institute for Occupational Safety & Health (NIOSH)**

**National Institute on Aging**

**Office of Behavioral and Social Sciences Research (OBSSR)**

**National Heart, Lung and Blood Institute (NHLBI)**

Grants from the **Alfred P. Sloan Foundation**, the **William T. Grant Foundation** and the **Administration for Children and Families** have provided additional funding.

Thanks to the Minnesota Population Center (R24 HD041023), U of M College of Liberal Arts, MIT Sloan, CultureRx, and especially the study participants.

www.workfamilyhealthnetwork.org

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# WFHN Intervention: Getting to Greater Control and Supervisor Support

- **What?** Work groups reconsider when, where, and how work is done.
  - *Collective process vs.*
  - *individual accommodation*
  - *(or unexamined intensification of work)*
- **Why?** Dual Agenda = Aim to make work more effective, efficient, *and* sustainable for all employees.
  - *Broadly framed interests vs.*
  - *family needs or women's struggles*

Tool Kits for implementing at www.workfamilyhealthnetwork.org

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# "Given the way things are today, how do you feel?" – Free response from >25 teams


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# "Given the way things are today, how do you feel?" – Overload vs. Work-Life Conflicts


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# Effects of Randomized Field Trial: WFHN Intervention

- **In IT Corporation:** Increased job satisfaction, decreased burnout , stress, psychological distress, work-life conflict; modest increases in sleep duration and quality; reduced turnover and, among respondents 50-64 years: Delayed anticipated date of retirement
- **In Nursing homes:** Reductions in stress, psychological distress among family caregivers + Reduction in Smoking
- **In Both:** Intervention improved CRS those with higher baseline CRS. Older employees - significantly larger reductions in CRS

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# Two Natural Experiments on New Ways of Working

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## 1. Pandemic Catalyzed Remote Work and Retrenchments

(Fan & Moen 2022;2023;2024)

- Positive impacts of remaining remote/hybrid compared to going back to working at work:
  - Higher job demands, reduced schedule control in the office
- Remote/hybrid work may bridge some of the gender/racial disparities in job conditions:
  - When returning to work, Hispanic and Black women see a greater decline in decision latitude and schedule control
  - Hispanic women experience a greater increase in job monitoring when returning to work
- Going back to working at work increases white workers' but reduces Black men's sense of coworker support

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# Many Returning to Office Following Lockdown in U.S. Prefer to Work at Home


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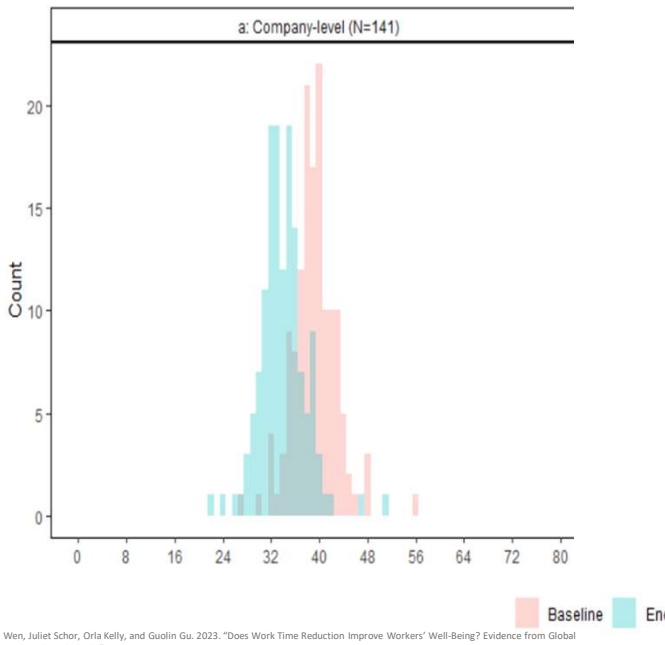
## 2. (Natural) Experiments with a 4-day Workweek

(Fan et al 2024; Schor 2025; Chu et al 2025; Moen & Chu 2023)

**Fig. 2 Distribution of hours worked per week: Baseline and endpoint**




Fan, Wen, Juliet Schor, Orla Kelly, and Guolin Gu. 2023. "Does Work Time Reduction Improve Workers' Well-Being? Evidence from Global Four-Day Workweek Trials."

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**Slide 26**

**PM0** Insert the 4 day work week picture here the one from next slide
Phyllis E Moen, 2025-01-04T20:09:34.245

## Today…

I. Dislocations
II. Evidence
   A. Employment and Cognitive Functioning
   B. Job Conditions, Risks/Protective Factors
   C. What We Need to Know

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## Needed: A Life Course Intersectional Focus on Time, Timing, Trajectories

**1. Timing:** WHEN in the Life course do Certain Characteristics Matter for Cognitive Functioning?

**2. Historical Time:** How are Changes in the Digital, Temporal, and Spatial Organization of Work and Retirement Affecting **Cognitive Ability and Decline?**

**3. Trajectories:** How are Protective Factors of Education, Income, Wealth Related to Working Conditions and Job Durations? Reverse Causality?

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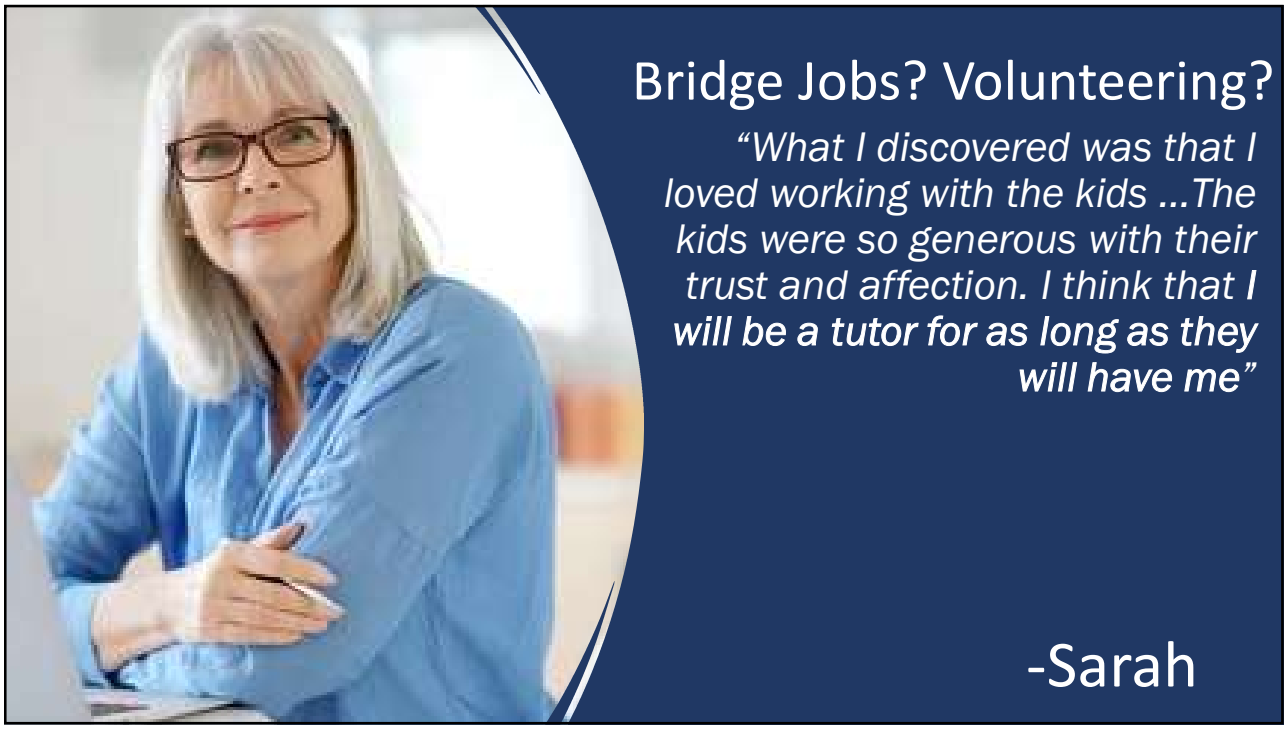


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## Unequal and Gendered Pathways to Retirement in the U.S.

- Black women and men more apt to follow disability pathways
- Older white women generally and white men in their 60s and early 70s more likely to follow part-time path
- Black and Hispanic women more apt to move out of workforce in 50s and 60s for family reasons

(Moen, Wang & Flood 2022)

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# Three Protective Factors Postponing Cognitive Aging:

1

**Protective Effects of Education and Ongoing Learning**

- Cognitive Reserve
- Job Complexity
- Training,

2

**Protective Effects of Social Engagement**

- Relationships
- Work/Volunteering
- A sense of meaning or Purpose

3

**Protective Effects of a Sense of Control**

- (Fit/Misfit between Preferences & Job Conditions, Work Status
- Ability to change

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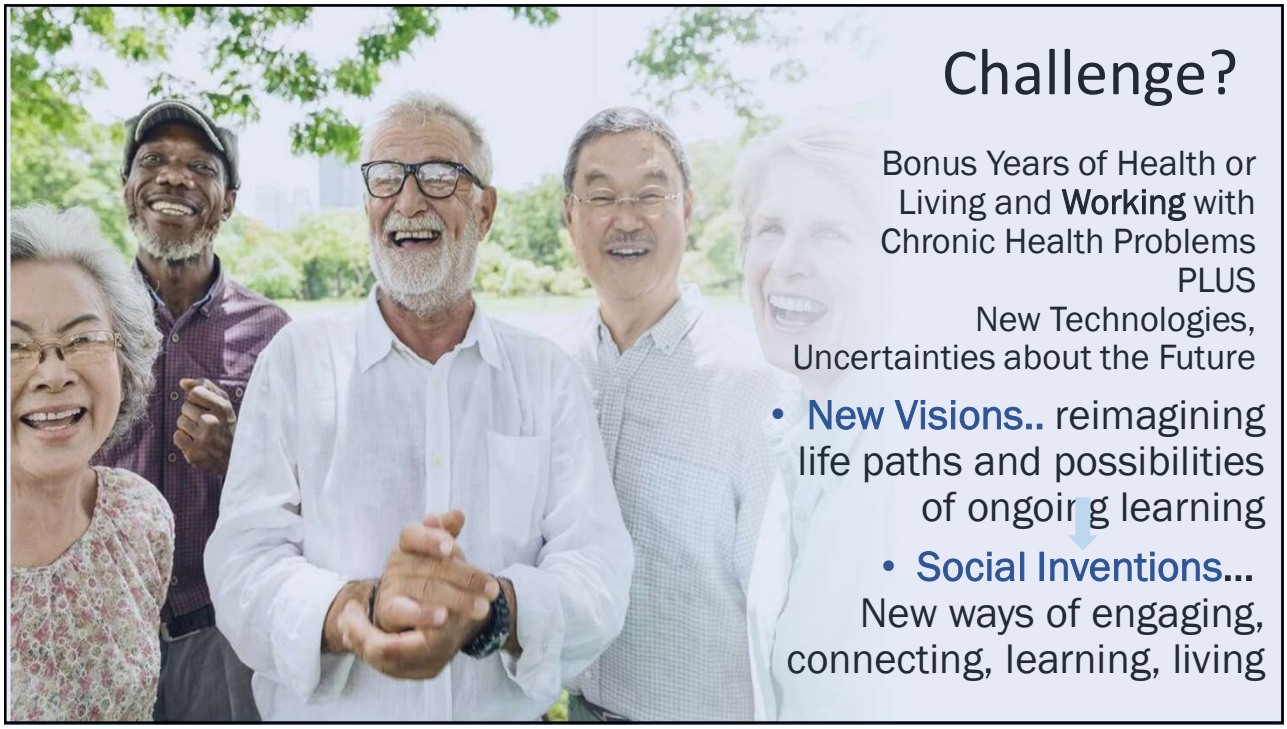

## Challenge?

Bonus Years of Health or Living and **Working** with Chronic Health Problems
PLUS
New Technologies, Uncertainties about the Future

- New Visions.. reimagining life paths and possibilities of ongoing learning
- Social Inventions… New ways of engaging, connecting, learning, living

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## How to Better Structure Work/ Retirement Paths…

New Templates, Ongoing *Voluntary* Engagement…


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# Appendix

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# References


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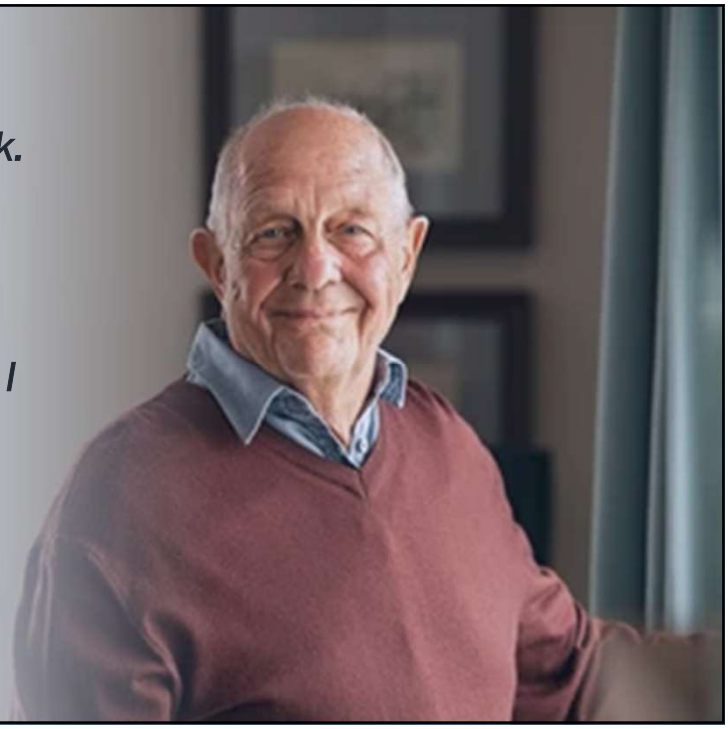
# Acquiescence…

*"I hadn't really built a network. And anybody who is in the business now of advising people to seek work are saying, rely on your network, you have built it haven't you? I said no. And then just sort of…like saying sorry friend you're in sad shape. That obviously was an error."*

-Tim



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# Flexible Wor & Scheduling Studies

**Table 2.** Flexible work and scheduling study characteristics and outcomes.

| Author, publication year *Country* | Industry | Primary intervention | Quality *Study design* | Outcomes: Context-free | Work-domain | Work-family |
|---|---|---|---|---|---|---|
| Bloom et al., 2015 *China* | Call centre | Flexible work | High *RCT* | ↑ | ↑ | |
| Kelly et al., 2014 *United States* | Knowledge | Flexible work | High *RCT* | | | ↑ |
| Kelly et al., 2011 *United States* | Knowledge | Flexible work | High *QE* | | | ↑ |
| Kossek et al., 2017 *United States* | Healthcare | Flexible work | High *RCT* | — | | |
| Marino et al., 2016 *United States* | Healthcare | Flexible work | High *RCT* | | | —↑ |
| Moen et al., 2011 *United States* | Knowledge | Flexible work | High *QE* | — | ↑ | ↑ |
| Moen et al., 2016 *United States* | Knowledge | Flexible work | High *RCT* | ↑ | ↑ | ↑ |
| Moen et al., 2013 *United States* | Knowledge | Flexible work | High *QE* | ↑ | ↑ | |
| Nijp et al., 2016 *Netherlands* | Knowledge | Flexible work | Mod *QE* | | ↑ | — |
| Albertsen et al., 2014 (3 studies) *Denmark* | Healthcare (a)<br>Healthcare (b)<br>Call centre (c) | Self-scheduling | Mod *QE** | | | —<br>↑<br>↓ |
| Garde et al., 2012 (3 studies) *Denmark* | Healthcare (a)<br>Healthcare (b)<br>Call centre (c) | Self-scheduling | High *QE* | —<br>↑<br>— | ↑<br>↑<br>— | |
| Hansen et al., 2015 (3 studies) *Denmark* | Healthcare (a)<br>Healthcare (b)<br>Call centre (c) | Self-scheduling | Low *QE* | | —<br>—<br>— | |
| Nabe-Nielsen et al., 2011 (3 studies) *Denmark* | Public/social service | Self-scheduling | Mod *QE* | ↑<br>↑<br>↑<br>↑ | ↑<br>↑<br>↑<br>↑ | —<br>—<br>—<br>↑ |
| Pryce et al., 2006 *Denmark* | Healthcare | Self-scheduling | Low *QE** | | | |
| Auger et al., 2012 *United States* | Healthcare | Shift change | Low *PRCS* | | —↓ | —↓ |
| Härmä et al., 2006 *Finland* | Labour | Shift change | Low *QE* | | ↑ | ↑ |
| Hossain et al., 2004 *Canada* | Labour | Shift change | Low *QE* | | ↑ | |
| Innstrand et al., 2004 *Norway* | Public/social service | Shift change | Low *QE* | | ↑ | |
| Kullberg et al., 2016 *Sweden* | Healthcare | Shift change | Low *QE* | ↑ | | |
| Schiller et al., 2017 *Sweden* | Call centre | Shift change | Mod *RCT* | ↑ | | |
| Strouse et al., 2003 *United States* | Public/social service | Shift change | Low *QE* | | ↑ | |

Abbreviations

**Study design**: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)

**Findings:** ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect); if blank, that outcome was not measured*

Fox, Kimberly E., Sydney T. Johnson, Lisa F. Berkman, Marjaana Sianoja, Yenee Soh, Laura D. Kubzansky, and Erin L. Kelly. 2022. "Organisational- and Group-Level Workplace Interventions and Their Effect on Multiple Domains of Worker Well-Being: A Systematic Review." *Work & Stress* 36(1):30–59. doi: 10.1080/02678373.2021.1969476.

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# Job & Task Change Studies

**Table 3.** Job and task change study characteristics and outcomes.

| Author, publication year *Country* | Industry | Primary intervention | Quality *Study design* | Outcomes: Context-free | Work-domain | Work-family |
|---|---|---|---|---|---|---|
| Bond & Bunce, 2001 *United Kingdom* | Public/social service | Job redesign | Low *QE* | ↑ | — | |
| Bond et al., 2008 *United Kingdom* | Call centre | Job redesign | Mod *QE* | ↑ | — | |
| Cifre et al., 2011 *Spain* | Labour | Job redesign | Low *QE* | ↑ | —↑ | |
| Fairbrother et al., 2010 *Australia* | Healthcare | Job redesign | Low *QE* | | ↑ | |
| Holman & Axtell, 2016 *United Kingdom* | Call centre | Job redesign | Mod *QE* | | ↑ | |
| Holman et al., 2010 *United Kingdom* | Knowledge | Job redesign | High *QE* | | —↑ | |
| Workman & Bommer, 2004 (1st of 3 studies) *United States* | Knowledge | Job redesign | Low *FE* | | ↑ | |
| Hosseinabadi et al., 2013 *Iran* | Healthcare | Lean management | Low *QE* | | ↑ | ↑ |
| Nahmens et al., 2012 *United States* | Labour | Lean management | Low *PT/PT* | | —↑ | |
| Parker, 2003 (3 studies) *United Kingdom* | Labour | Lean management | Mod *QE* | | ↓ | |
| von Thiele Schwarz et al., 2017 (2 studies) *Denmark (a) Sweden (b)* | Public/social service | Lean management | High *RCT* | ↓<br>↓<br>↑<br>↑ | ↑<br>↑ | |
| Workman & Bommer, 2004 (2nd of 3 studies) *United States* | Knowledge | Lean management | Low *FE* | | ↑ | |
| Engström et al., 2005 *Sweden* | Public/social service | Staff and material resources | Low *QE* | ↑ | ↑ | |
| Gidwani et al., 2017 *United States* | Healthcare | Staff and material resources | Mod *RCT* | | ↑ | |
| Liu et al., 2018 *China* | Labour | Staff and material resources | Mod *FE* | | ↑ | |
| Rickard et al., 2012 *Australia* | Healthcare | Staff and material resources | Low *QE* | ↑ | ↑ | |
| Vallières et al., 2016 *Sierra Leone* | Healthcare | Staff and material resources | Mod *RCT* | | — | |
| Venkatesh et al., 2010 *India* | Knowledge | Staff and material resources | Mod *FE* | | ↓ | |

Abbreviations

**Study design**: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)

**Findings:** ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect); if blank, that outcome was not measured*

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# Relational & Team Dynamics Studies

**Table 4.** Relational and team dynamics study characteristics and outcomes.

| Study characteristics | | | | Outcomes | | |
|---|---|---|---|---|---|---|
| Author, publication year *Country* | Industry | Primary intervention | Quality *Study design* | Context-free | Work-domain | Work-family |
| Amos et al., 2005 *United States* | Healthcare | Team dynamics | Low *PT/PT* | | —↑ | |
| Bergman et al., 2015 *Sweden* | Healthcare | Team dynamics | Mod *QE* | ↑ | —↑ | |
| DiMeglio et al., 2005 *United States* | Healthcare | Team dynamics | Low *QE* | | ↑ | |
| Glisson et al., 2006 *United States* | Public/social service | Team dynamics | High *RCT* | ↑ | ↑ | |
| Glisson et al., 2012 *United States* | Public/social service | Team dynamics | High *RCT* | | ↑ | |
| Kanste et al., 2010 *Finland* | Healthcare | Team dynamics | Low *QE* | — | —↑ | |
| Nielsen & Randall, 2009; 2012 *Denmark* | Healthcare | Team dynamics | Mod *QE** | ↑ | ↑ | |
| Tsirikas et al., 2012 *Greece* | Public/social service | Team dynamics | Mod *QE* | | ↑ | |
| Tran et al., 2010 *Australia* | Healthcare | Team dynamics | Low *QE* | | — | |
| Workman & Bommer, 2004 (3rd of 3 studies) *United States* | Knowledge | Team dynamics | Low *FE* | | — | |
| Yeatts & Cready, 2007 *United States* | Healthcare | Team dynamics | Low *QE* | | —↑ | |

Abbreviations

**Study design**: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)

**Findings:** ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect);* if blank, that outcome was not measured

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# Participatory Studies

**Table 5.** Participatory interventions.

| Study characteristics | | | | Outcomes | | |
|---|---|---|---|---|---|---|
| Author, publication year *Country* | Industry | Primary intervention | Quality *Study design* | Context-free | Work-domain | Work-family |
| Anderzén & Arnetz, 2005 *Sweden* | Public/social service | Participatory and diffuse | Mod *PT/PT* | ↑ | ↑ | |
| Bourbonnais et al., 2011 *Canada* | Healthcare | Participatory and diffuse | High *QE* | ↑ | ↑ | |
| Bourbonnais et al., 2006 *Canada* | Healthcare | Participatory and diffuse | Mod *QE* | ↑ | ↑ | |
| Dollard & Gordon, 2014 *Australia* | Public/social service | Participatory and diffuse | Mod *QE* | | — | |
| Gupta et al., 2018 *Denmark* | Labour | Participatory and diffuse | High *RCT** | — | — | |
| Hasson et al., 2014 *Canada* | Knowledge | Participatory and diffuse | Mod *QE* | | | — |
| Linzer et al., 2015 *United States* | Healthcare | Participatory and diffuse | High *RCT* | | —↑ | |
| Linzer et al., 2017 *United States* | Healthcare | Participatory and diffuse | High *RCT* | | ↑ | |
| Nylén et al., 2017 *Sweden* | Public/social service | Participatory and diffuse | Mod *QE** | | — | |
| Sørensen & Holman, 2014 *Denmark* | Knowledge | Participatory and diffuse | Mod *QE** | | ↑ | |
| Strolin-Goltzman et al., 2009 *United States* | Public/social service | Participatory and diffuse | Mod *QE* | | ↑ | |
| Uchiyama et al., 2013 *Japan* | Healthcare | Participatory and diffuse | High *RCT** | — | | |
| Biron et al., 2016 (3 studies) *Canada* | Knowledge (a) | Participatory but targeted | Mod *QE** | ↑ | | |
| | Knowledge (b) | | | ↑ | | |
| | Healthcare (c) | | | ↑ | | |
| Dahl-Jørgensen & Saksvik, 2005 (2 studies) *Norway* | Retail (a) | Participatory but targeted | High *QE* | | —↑ | |
| | Healthcare (b) | | | | —↑ | |
| Framke et al., 2016 *Denmark* | Knowledge | Participatory but targeted | High *RCT** | — | — | |
| Hall et al., 2008 *Canada* | Healthcare | Participatory but targeted | Mod *QE* | | —↑ | |
| Kobayashi et al., 2008 *Japan* | Labour | Participatory but targeted | Mod *QE* | ↑ | —↑ | |
| Tsutsumi et al., 2009 *Japan* | Labour | Participatory but targeted | High *RCT** | —↑ | | |
| van der Wal et al., 2008 *Canada* | Healthcare | Participatory but targeted | Low *PT/PT* | | —↑ | |

Abbreviations

**Study design**: RCT (randomised controlled trial); QE (quasi-experiment); PT/PT (pre-/post-test); FE (field experiment); PRCS (partially randomised cohort study); * (process evaluation reported)

**Findings:** ↑ *(statistically significant positive intervention effect);* ↓ *(statistically significant negative intervention effect);* — ↑ *(mixed effects);* — *(null effect);* if blank, that outcome was not measured

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**Slide 39**

**PM0** Can’t do two sets...just one on each ...also can we highlight the up arrows somehow?
Phyllis E Moen, 2025-01-04T15:44:18.193

## Study and Showcase **Innovations (Structural Leads)**

- Natural experiments in the public, private, and social (nonprofit) sectors
- "Institutional work" —pioneering innovative policies and practices
- But also recognize retrenchments. **Change is hard**
- Investigate whether and how innovations exacerbate or remedy inequities in cognitive functioning

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## Other Forms of Cognitive Activity?

"We defined the exposure of interest to be reading, craft activities, computer activities, playing games, playing music, group activities (e.g., book club), social activities (e.g., going out to movies and theaters), artistic activities, and watching television."

(Zheng et al. 2023)

Zheng, Hui, Kathleen Cagney, and Yoonyoung Choi. 2023. "Predictors of Cognitive Functioning Trajectories among Older Americans: A New Investigation Covering 20 Years of Age- and Non-Age-Related Cognitive Change" edited by K. Latham-Mintus. *PLOS ONE* 18(2):e0281139. doi: 10.1371/journal.pone.0281139.

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# What is an Institution?

- Three things make something an institution: *language*, *customs*, and *body of rules and laws*[1]
- "Cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers – culture, structures, and routines – and they operate at multiple levels of jurisdiction."[2]
- Social Environment….treated as (unchanging) background

1. Biggart & Beamish (2003) The Economic Sociology of Conventions: Habit, Custom, Practice and Routine in Market Order. Annual Review of Sociology 29: 443-464.
2. Scott, W. Richard. 1995. Institutions and Organizations. Thousand Oaks, CA: Sage.

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