Healthy Aging: Psychosocial Factors at Work

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Lifespan Developmental Psychology Lab

Outline

- Risk and protective factors for physical and mental health
- The social gradient and health: Mediators and moderators
- Work environment and climate
- What older adults can contribute at work
- Age heterogeneous teams and innovation
- Conclusions and Next Steps

Work and Health

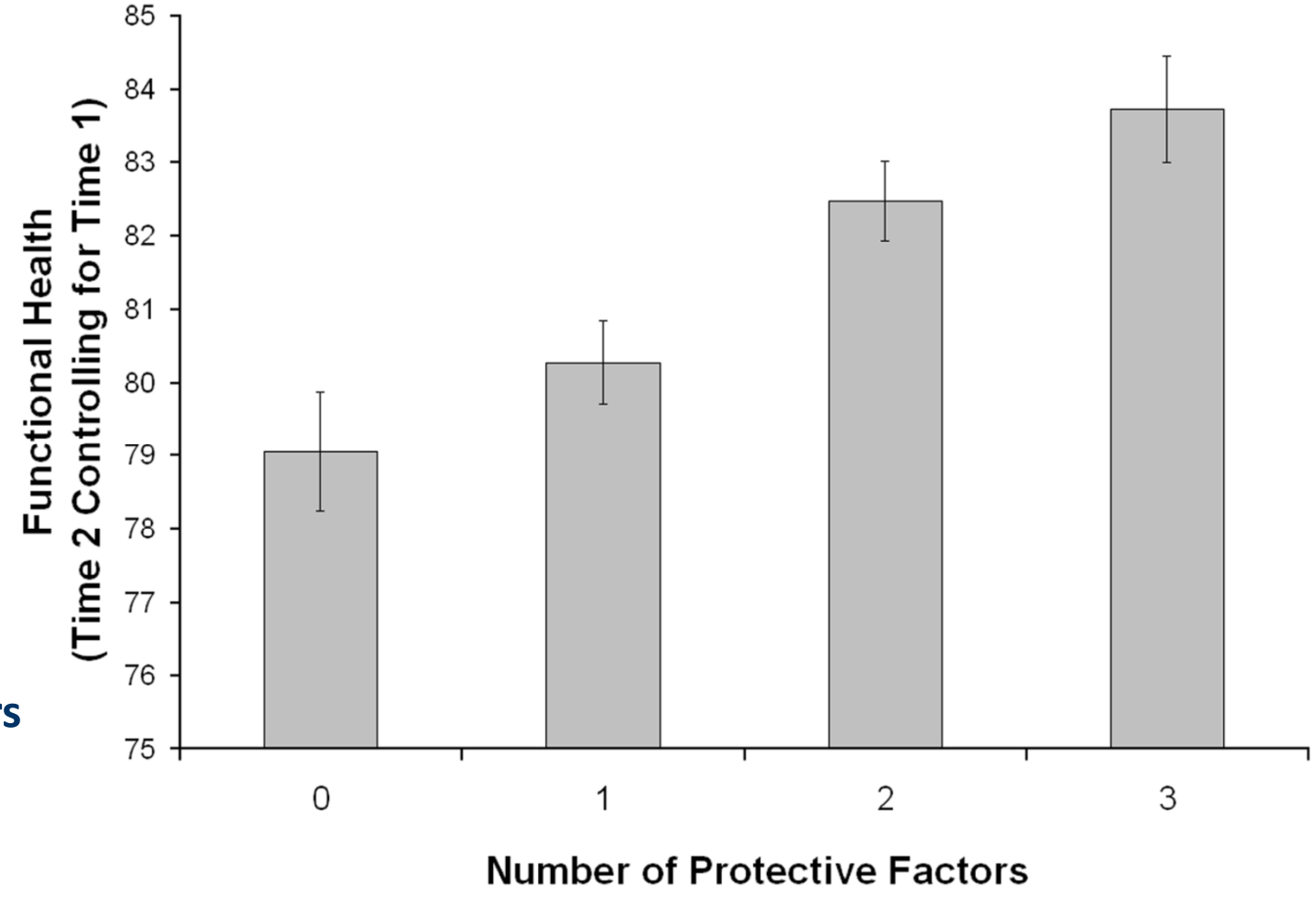
- Physical health
- Cognitive functioning
- Psychological well-being

Psychosocial and behavioral factors: Malleable risk and protective factors for health

- Attitudes and Beliefs
  - Sense of control (mastery, perceived constraints)*
  - Subjective age
  - Attitudes towards aging
- Social Factors
  - Engagement
  - Volunteering and civic engagement
  - Loneliness
  - Social contact
  - Social support*
  - Social conflict and strain
- Activity
  - Cognitive stimulation
  - Physical activity*
  - Sedentary lifestyle
  - Volunteer work

* Included in protective factor examples

The More Protective Factors the Greater the Maintenance of Functional Health over Ten Years



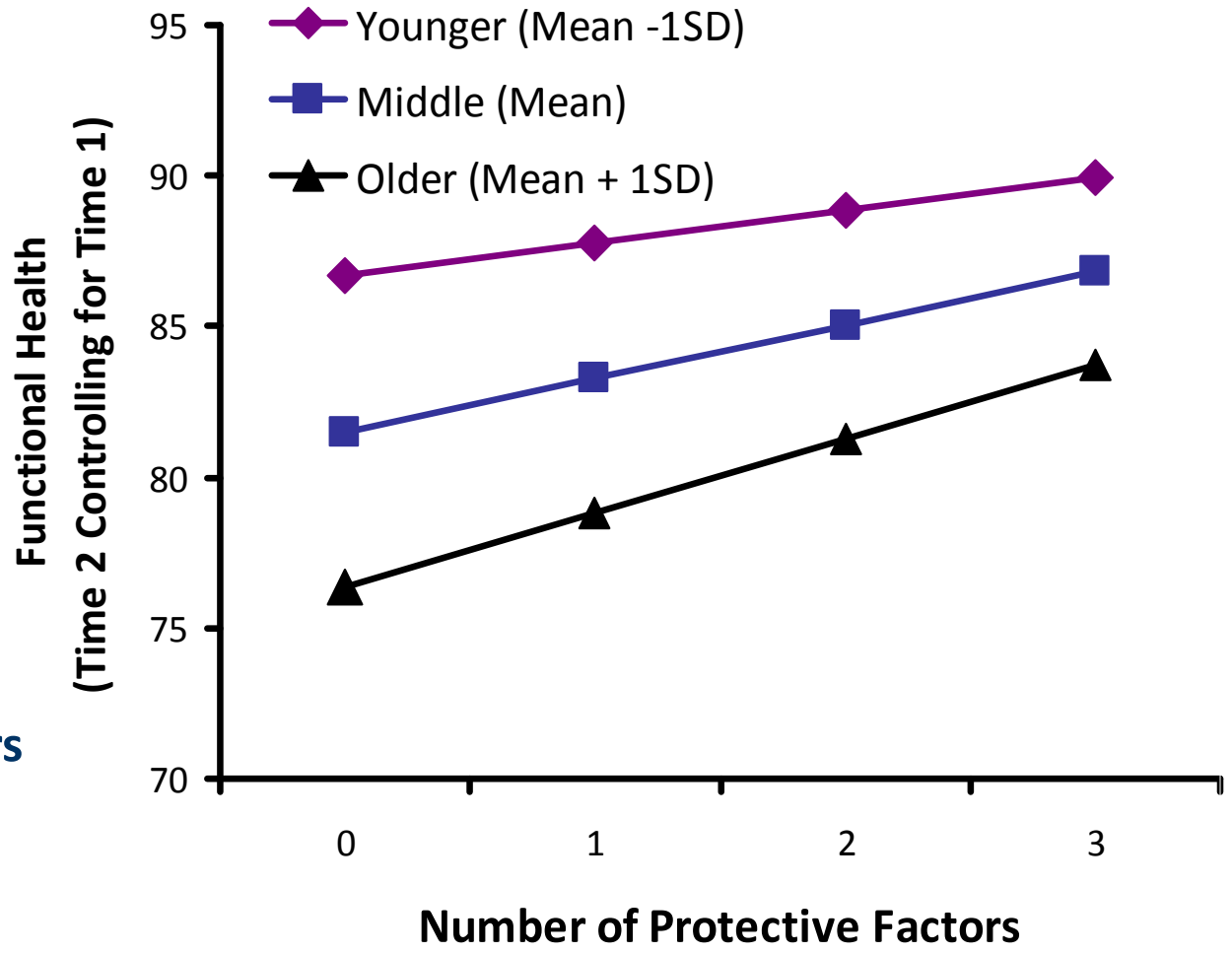
Protective Factors

- **Control Beliefs**
- **Social Support**
- **Physical Activity**

Lachman & Agrigoroaei (2011)

Controlling for socio-demographics, health status, physical risk factors, and functional health at Time 1

Changes in Functional Health by Age are Moderated by the Number of Protective Factors



Protective Factors

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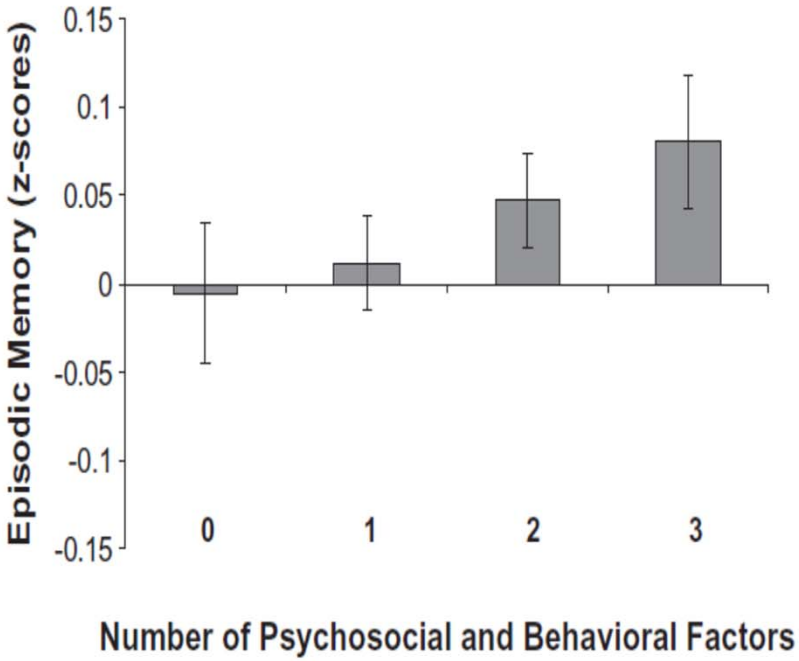
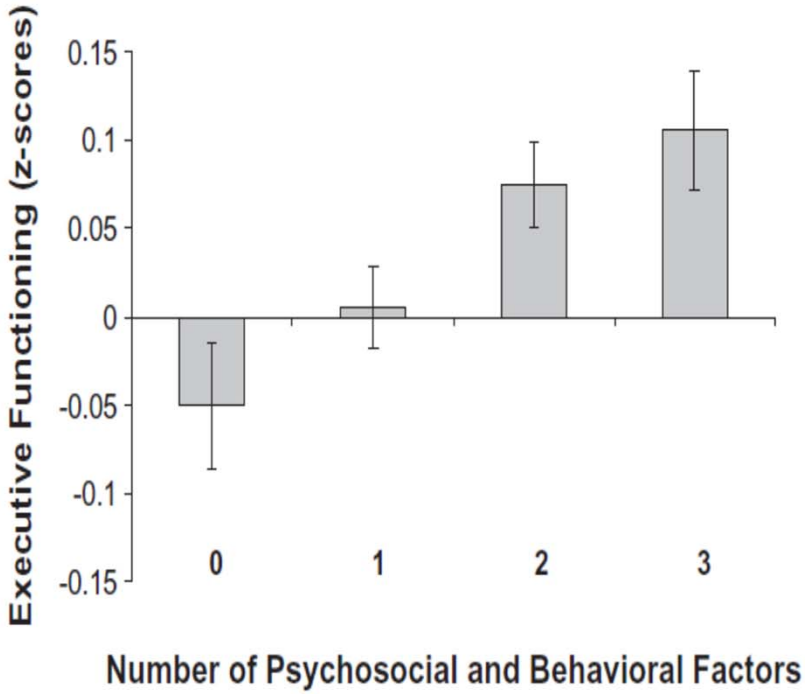
Lachman & Agrigoroaei (2011)

Controlling for socio-demographics, health status, physical risk factors, and functional health at Time 1

The More Protective Factors the Higher the Cognitive Functioning (EM and EF)

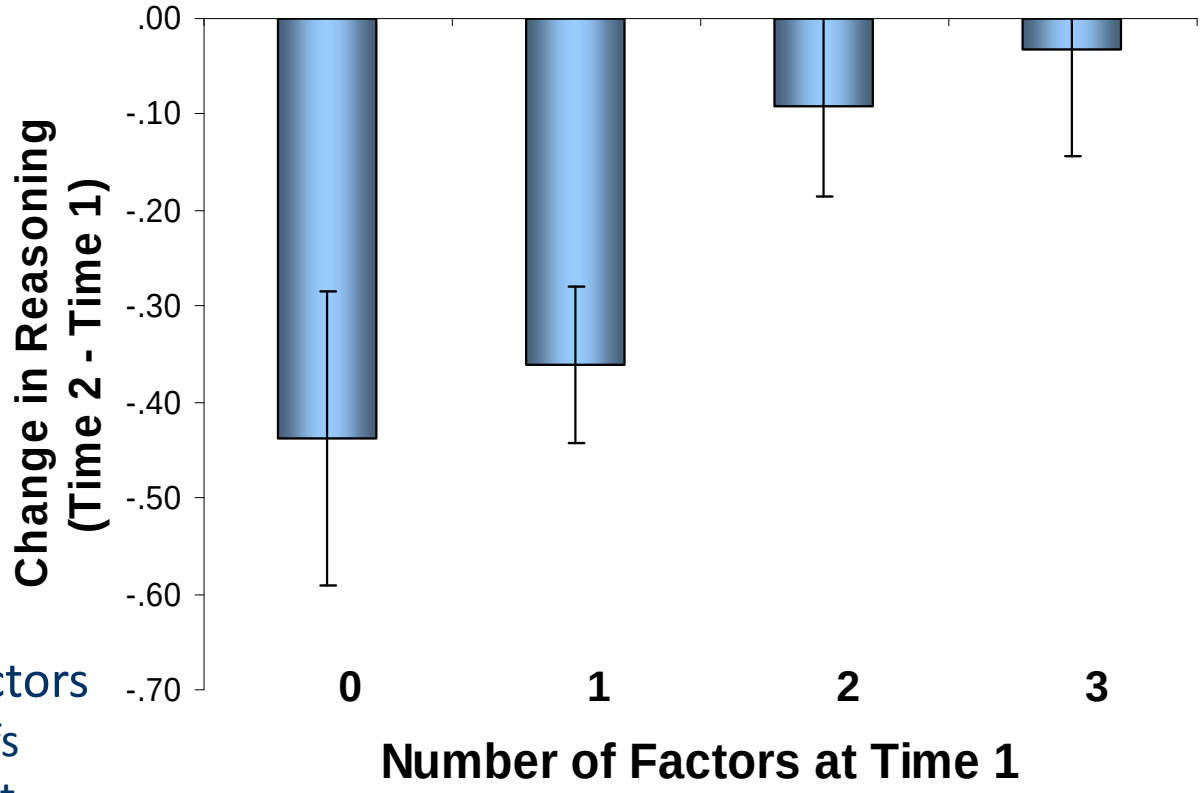




Protective Factors
- Control Beliefs
- Social Support
- Physical Activity

Controlling for socio-demographics, health status, physical risk factors, cognitive activities and functional health

The More Protective Factors the Less the 10-year Declines in Reasoning



Protective Factors
- Control Beliefs
- Social Support
- Physical Activity

Agrigoroaei & Lachman (2011)

Controlling for age, sex, education, race, waist circumference, smoking, alcohol problems, functional health

Work can provide experiences that are protective for maintaining health and cognitive abilities

- Sense of mastery and control*
- Social engagement and support*
- Physical activity*
- Cognitive stimulation*
- Purpose in life
- Opportunities for generativity and mentoring
- Intergenerational contact
- Routine, Structure
- Goal fulfilment
- Challenges
- Creative outlets

*Included in data examples

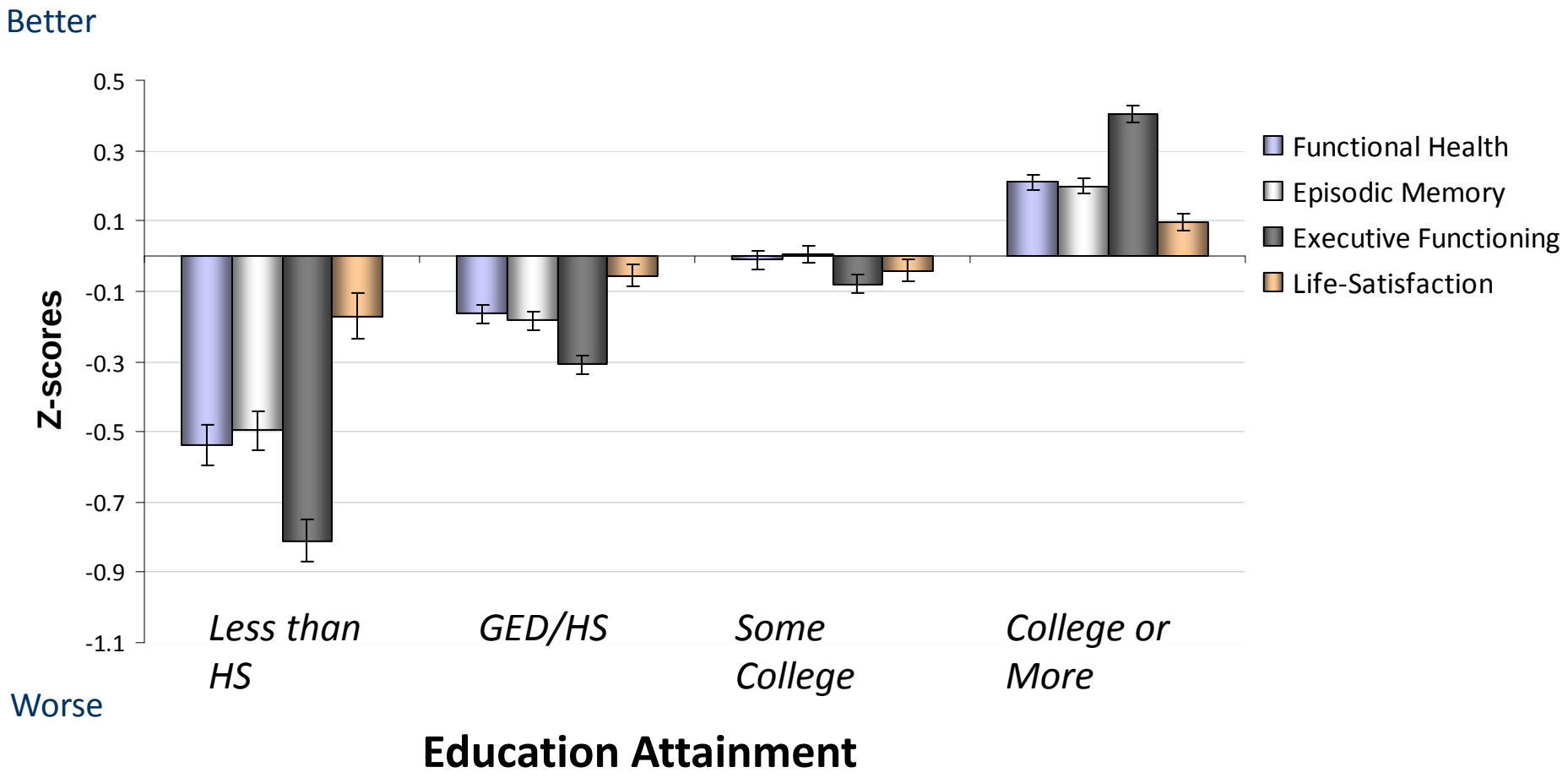
Working Longer vs. Retirement

- Work provides experiences (e.g., engaged and active lifestyle) that are associated with better health.
- If retired, can one find substitutes for such protective work-related experiences?

The Social Gradient and Health: Mediators and Moderators

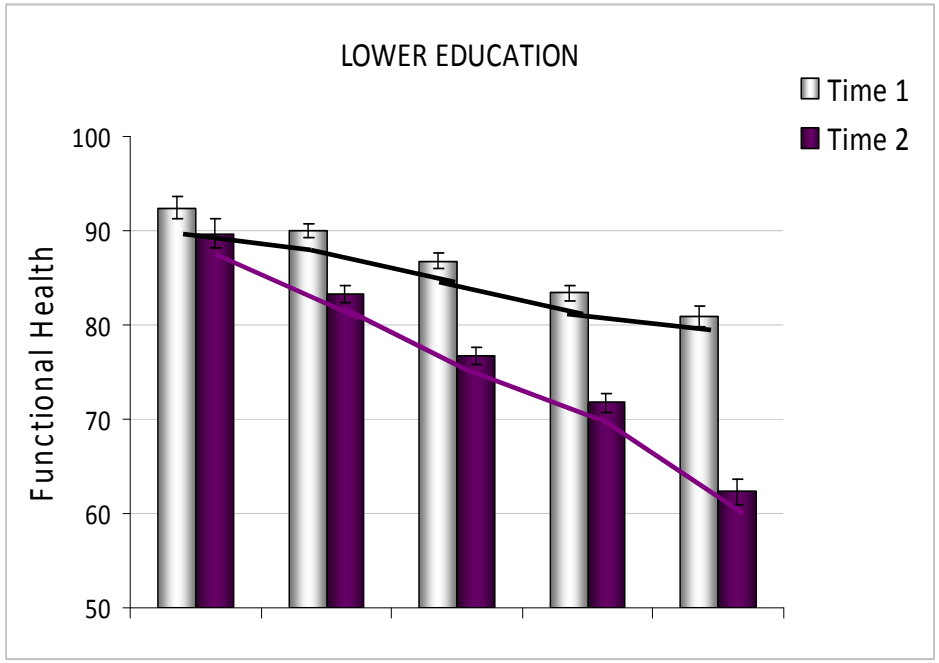
- Educational attainment and income are related to health and well-being.
- Declines begin earlier for low socioeconomic status (SES). (Less reserve capacity?)
- Work may be more beneficial for those with lower SES (e.g., delay declines).
- Interventions may be more effective for those with lower SES, i.e., those who are more vulnerable.

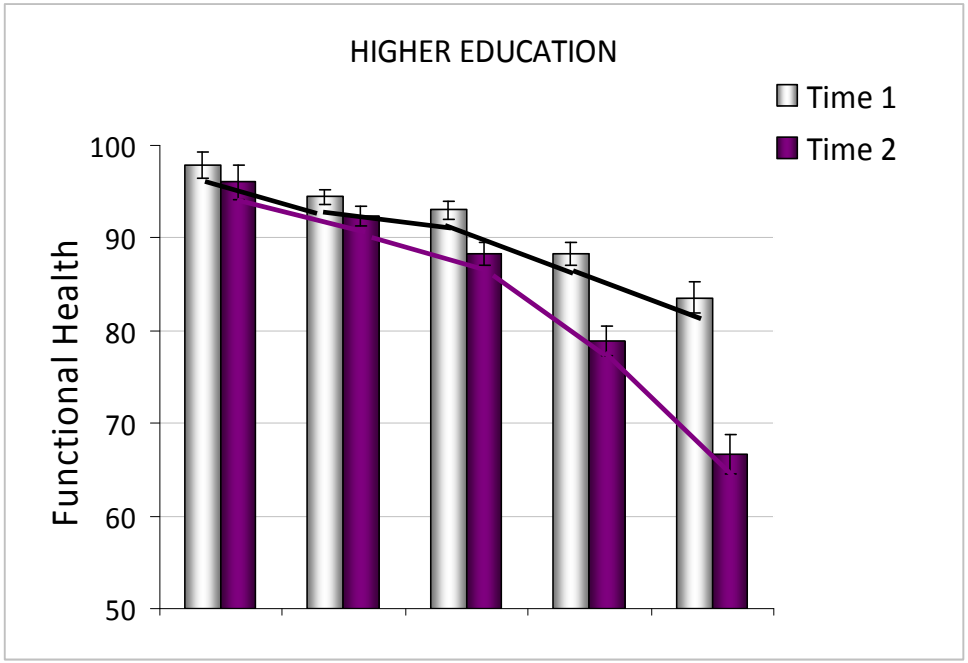
Differences in Health by Education(MIDUS 2)



Controlling for age and sex

10-year Change in Functional Health by Age and Education (MIDUS)





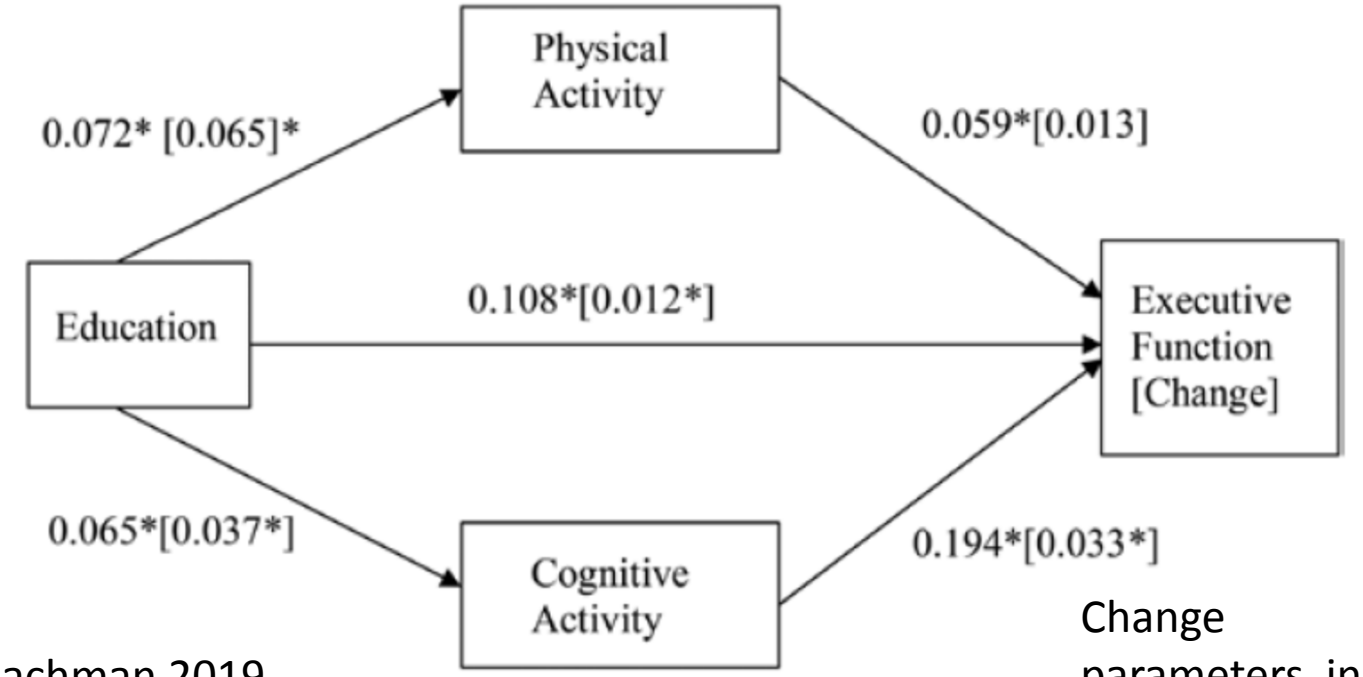
Controlling for sex

Resilience and Low SES

- There is good evidence that among those who are vulnerable there is variability and not everyone has poor health outcomes.
- A key question is why some do better than expected, i.e., are resilient
- Basic research has shown the possibilities for resilience among those who are low in SES
- One powerful factor is how life circumstances and situations are appraised and beliefs about whether they can change or their actions will make a difference (sense of control)
- An active or engaged lifestyle is another important resilience factor (cognitive stimulation, physical activity, social contacts)

Mediation and Moderation

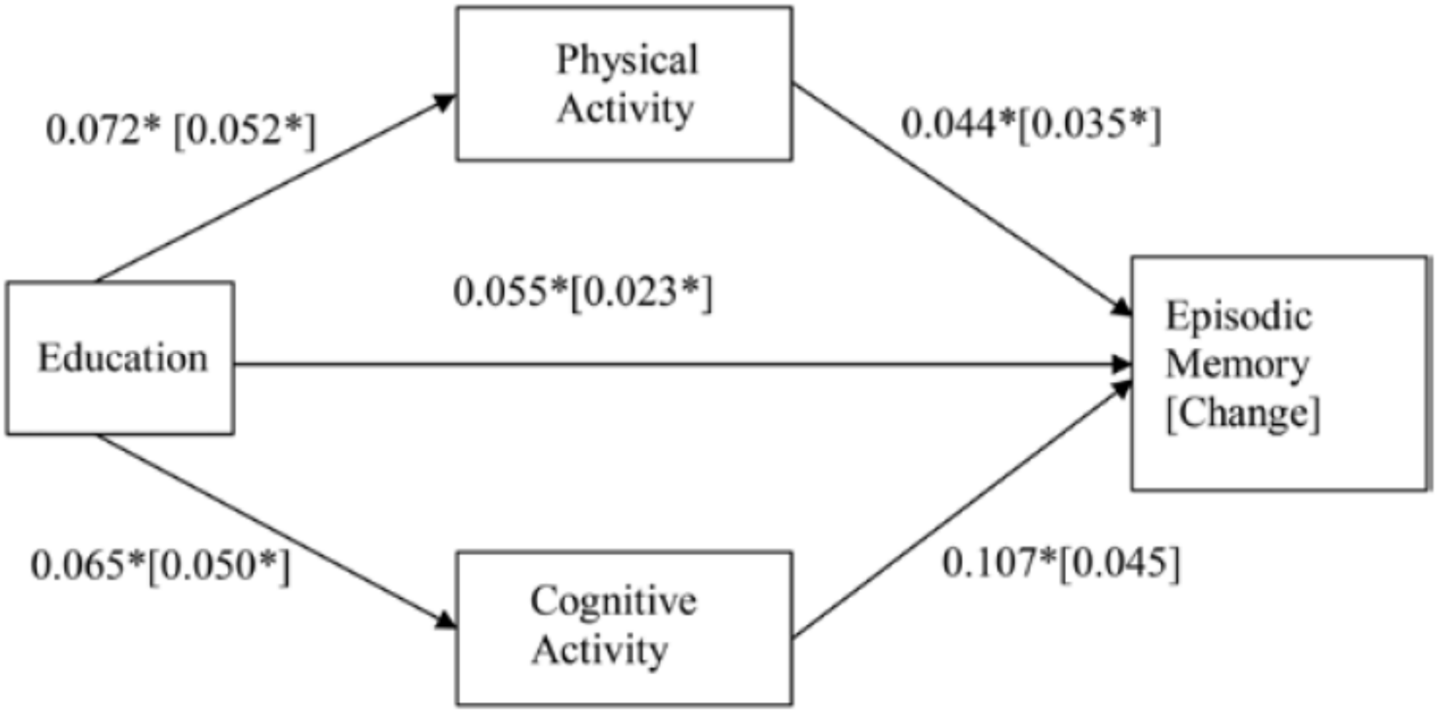
The Relationship of Education and Executive Function is Mediated by Physical Activity and Cognitive Activity (MIDUS)



Liu & Lachman 2019

Change parameters in [ ]

The Relationship of Education and Episodic Memory is Mediated by Physical Activity and Cognitive Activity (MIDUS)



Liu & Lachman 2019

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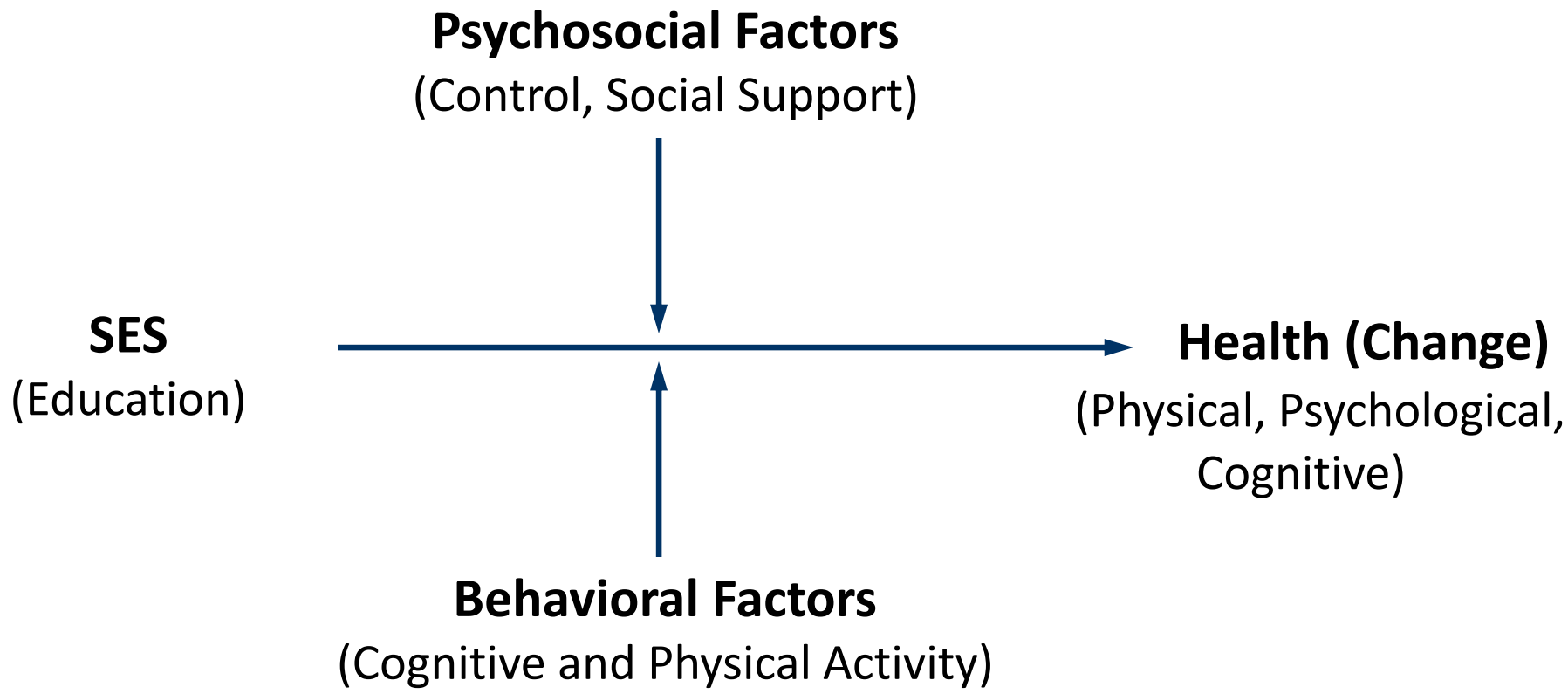
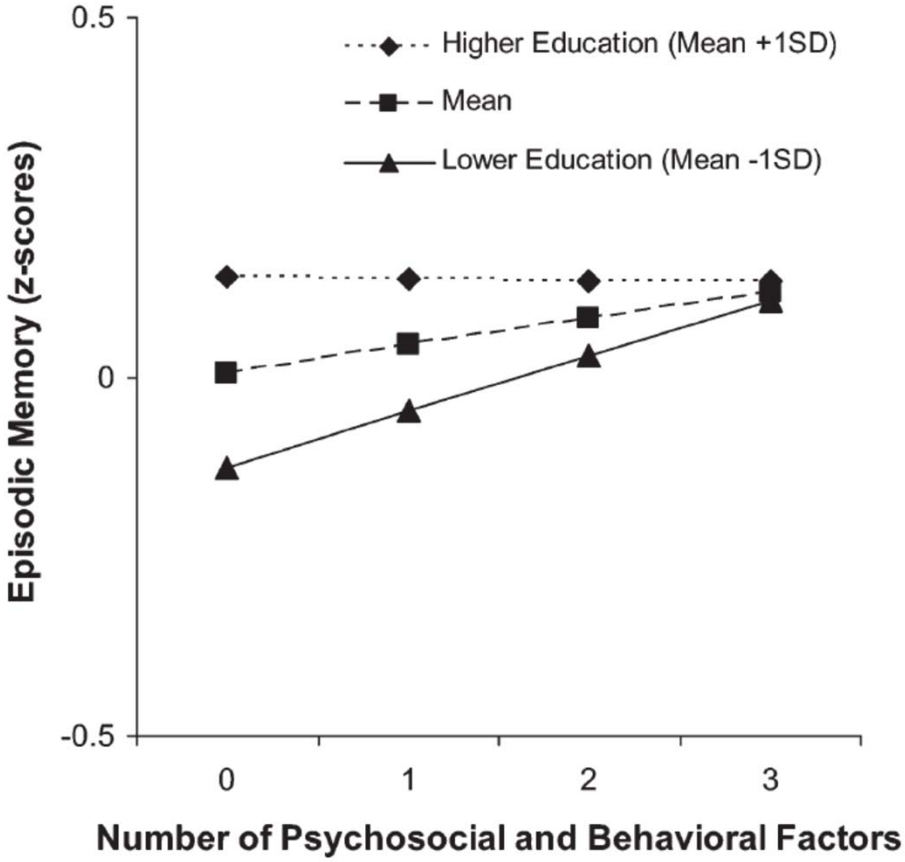
Moderation Model



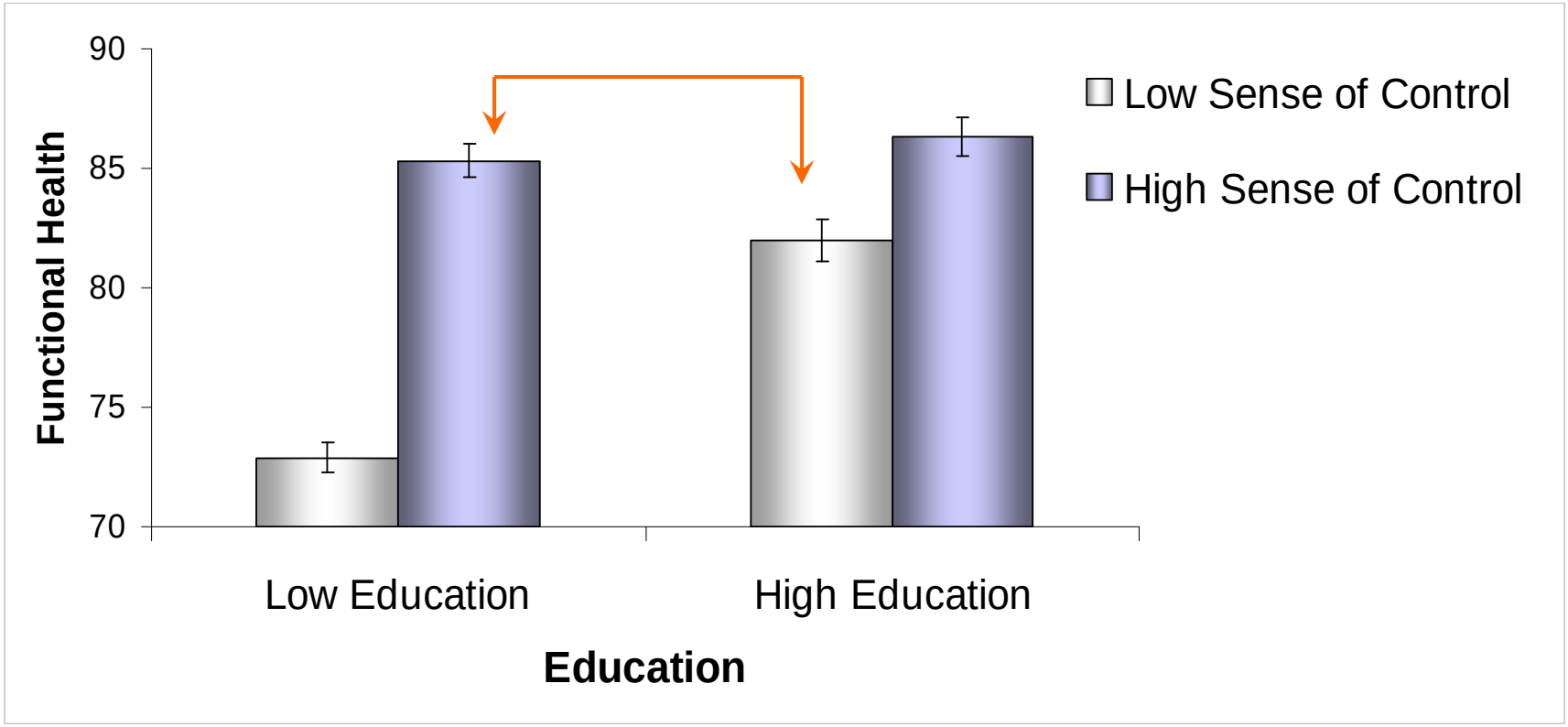
Education differences in memory are attenuated by psychosocial and behavioral factors



Adjusted for sociodemographic factors, cognitive activities, physical health, physical risk factors

Agrigoroaei & Lachman, 2011

Sense of Control Moderates SES Differences in Functional Health

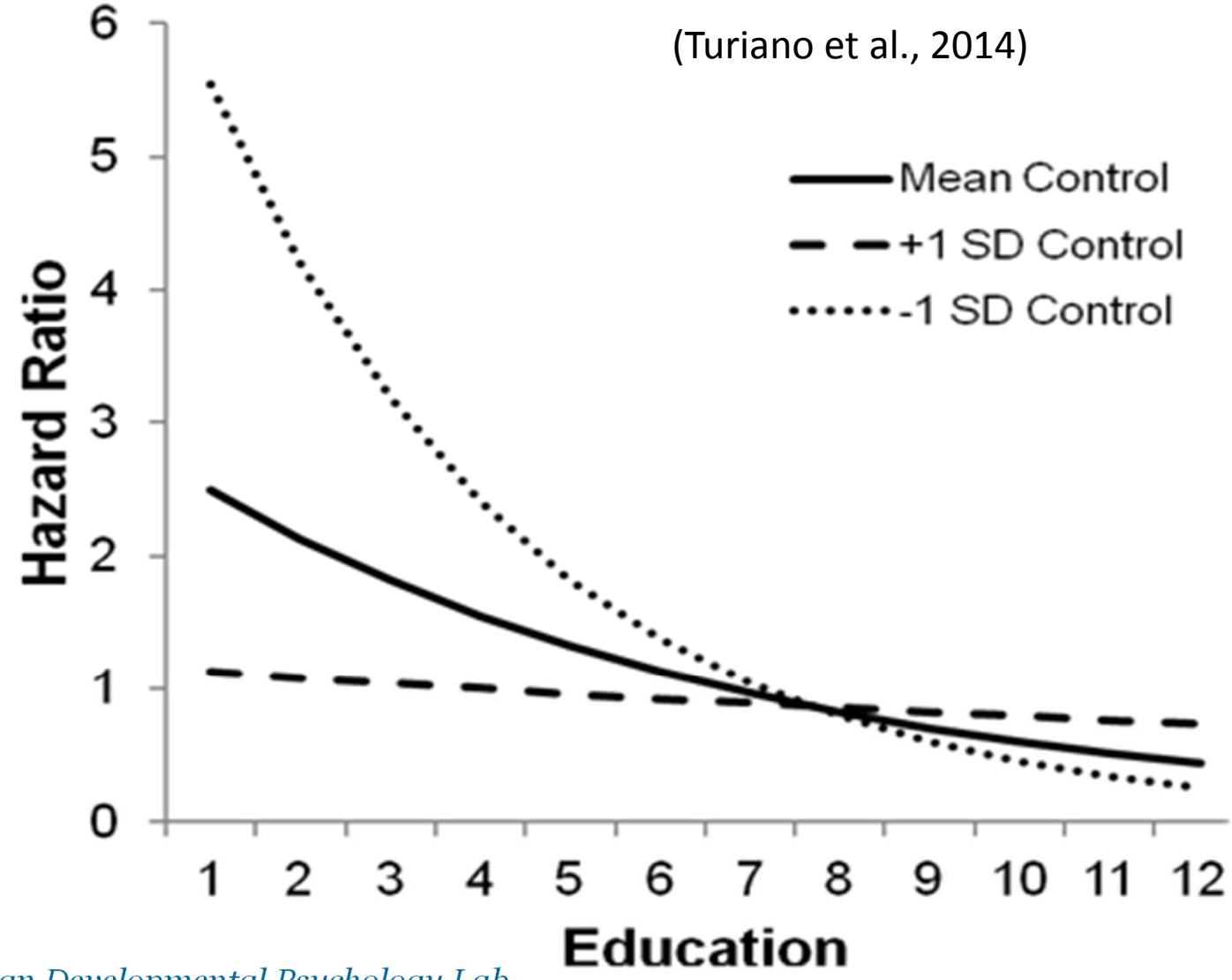


based on Lachman & Weaver (2008)

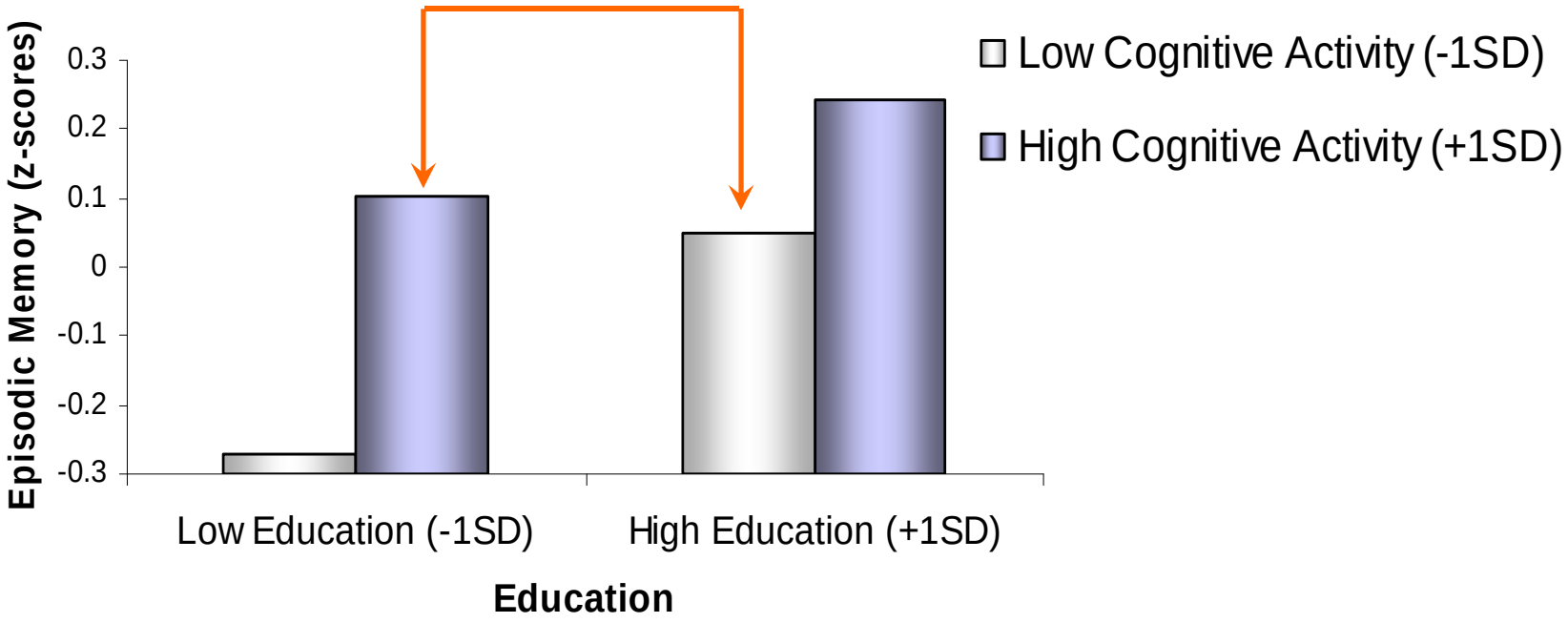
Controlling for age, sex, income, race, waist circumference, smoking, and alcohol or drug problems

Education and Mortality Risk: Control Beliefs as a Moderator Cox Regression *survival curves*

(Turiano et al., 2014)



Frequent Cognitive Activity Moderates Education Differences in Episodic Memory



Midlife in the U.S. (MIDUS) *(Lachman, Agrigoroaei, Murphy & Tun, 2010)*

Controlling for age, sex, self-rated health, physical activity, and income

Low SES and Resilience

- Although those from low SES backgrounds are at higher risk and are more vulnerable for accelerated aging, they also are likely to be more responsive to psychosocial and behavioral changes.

- "Differential susceptibility" refers to individual differences in the response to adversity (NIA midlife reversibility, 2012). It suggests that the same attributes that make an individual particularly sensitive to adversity may also make him or her more responsive to interventions designed to offset the effects of adversity.

Low SES and Resilience

- There is evidence across multiple domains that those who are at risk for poor aging outcomes are the ones who benefit most from psychosocial moderators (Ryff,et al., 2012; Lachman & Weaver, 1998; Miller et al.,2011; Turiano et al., 2014) .

- This may be in part because these individuals have more room to show improvement, or also because they may be more motivated to change.

Features of work environment and climate to facilitate working longer and good health

- Supportive atmosphere
- Collaborative atmosphere
- Short commute time
- Resources
- Safe setting
- Complexity
- Stimulation
- Opportunities to learn new things
- Opportunities to be creative
- Clear Expectations
- Attainable goals
- Positive affect
- Valued
- Motivating
- Novelty
- Age friendly
- Dignity and respect (not ageist)

What older workers can bring to the workplace

- Experience
- Crystallized intelligence
- Tacit knowledge
- Wisdom
- Generativity, Mentoring
- Institutional knowledge
- Reliability
- Loyalty

Age and Inventions: Age Composition of Teams

Reinventing the Older Worker:

Age and Creativity Through the Lens of Patent Data

Mary Kaltenberg[1], Adam B. Jaffe[1,2], Margie E. Lachman[1]

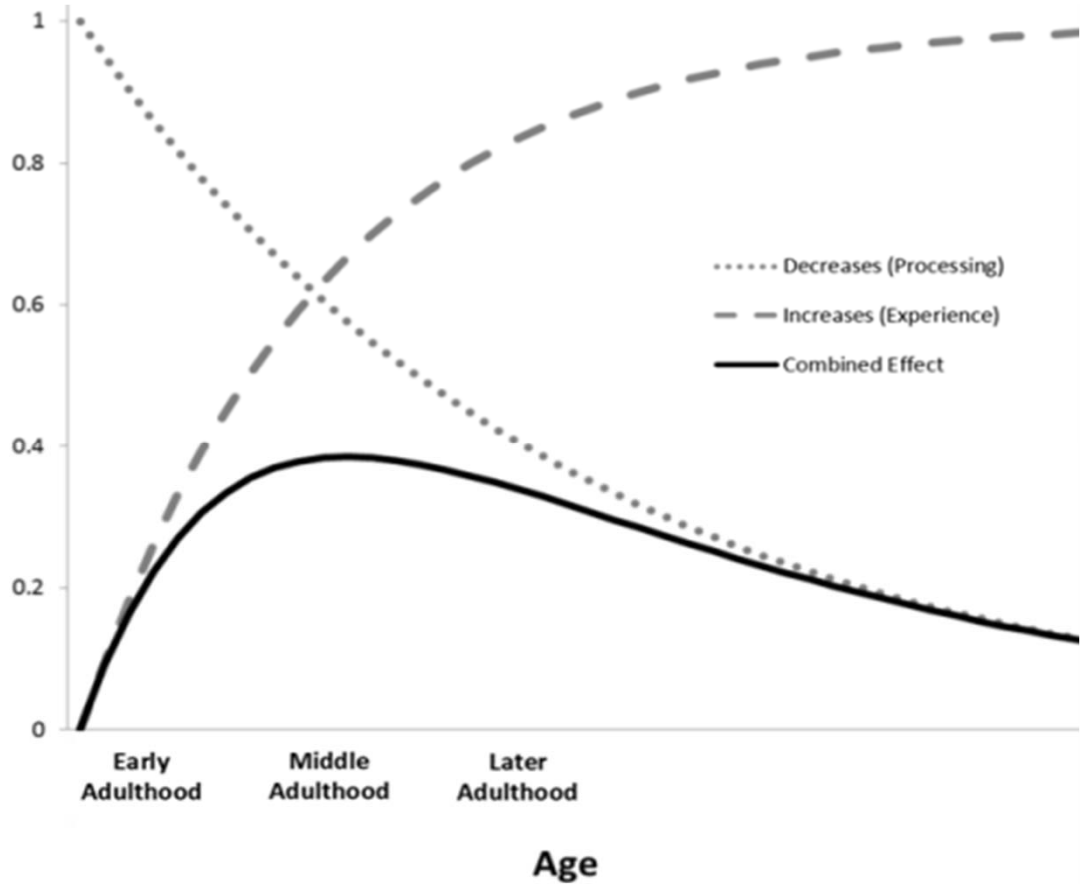
Brandeis University[1] and NBER[2]

Presented at the NBER Summer Institute on Aging

July 2019

Lifespan Developmental Psychology Lab

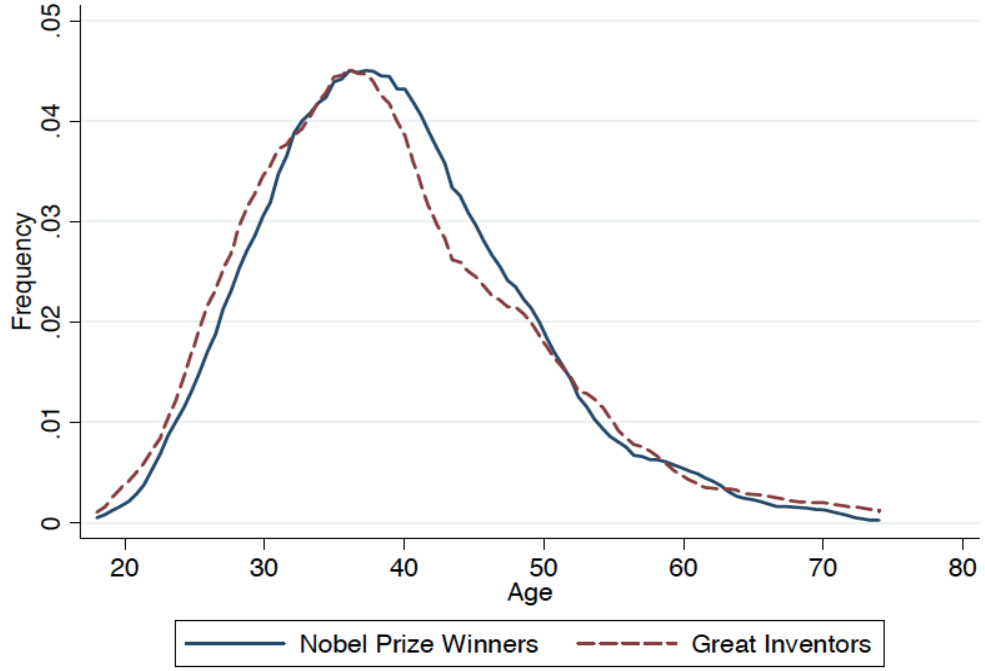
Conceptual Model of Cognitive Abilities over Life Course: Fluid (Mechanics) and Crystallized (Pragmatics) Intelligence



Lachman, 2015

Double exponential function

Age & ‘Genius’: Inventors’ Best Work



Jones, et al (2014), “Age and scientific genius”, NBER Working Paper No.19866.

Expectations for Older Workers

- Based on “genius” literature and focus on best work: older workers seen as less productive and less creative than younger adults.
- What about a more common activity: Patenting?

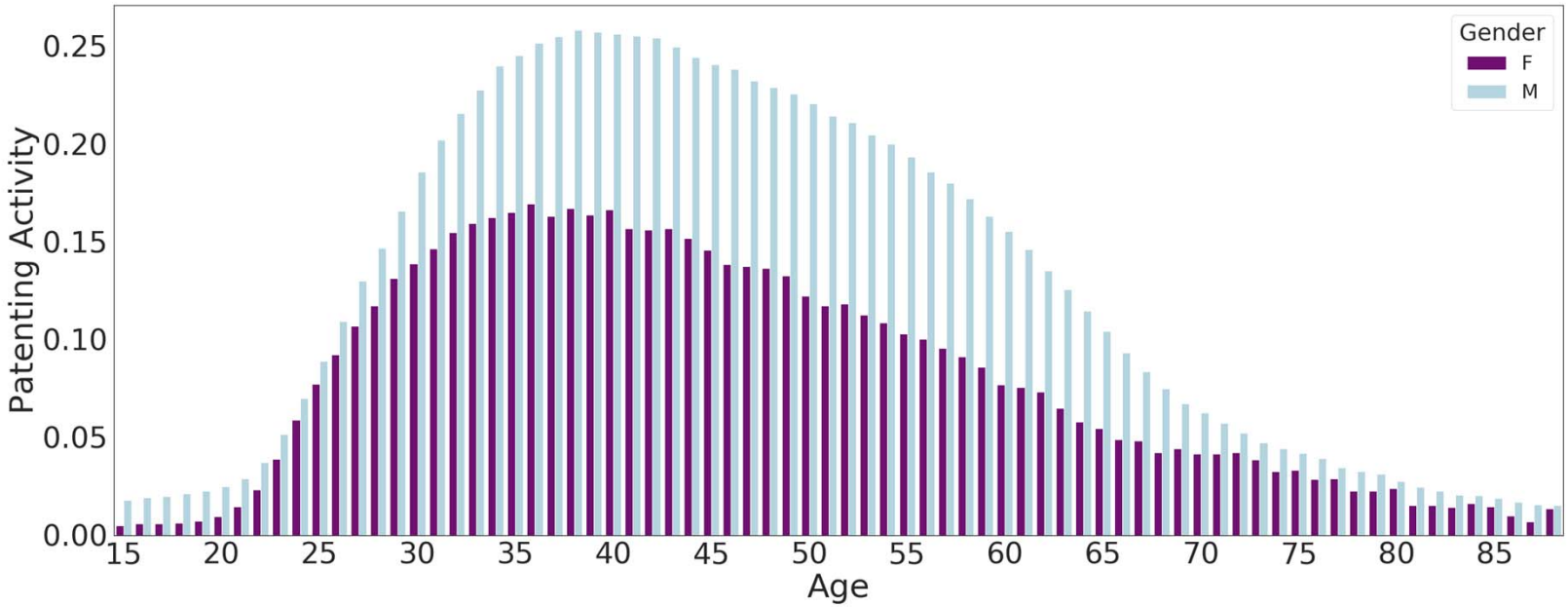
Data: U.S. Inventor Ages

- 3,648,663 patents with 1.5 million inventors patenting between 1976 and 2017
- Added age to the data base by scraping the web
- 60-70+% of inventors matched on **each** web site
- 80+% of inventors matched on **at least one** web site

Patent Attributes

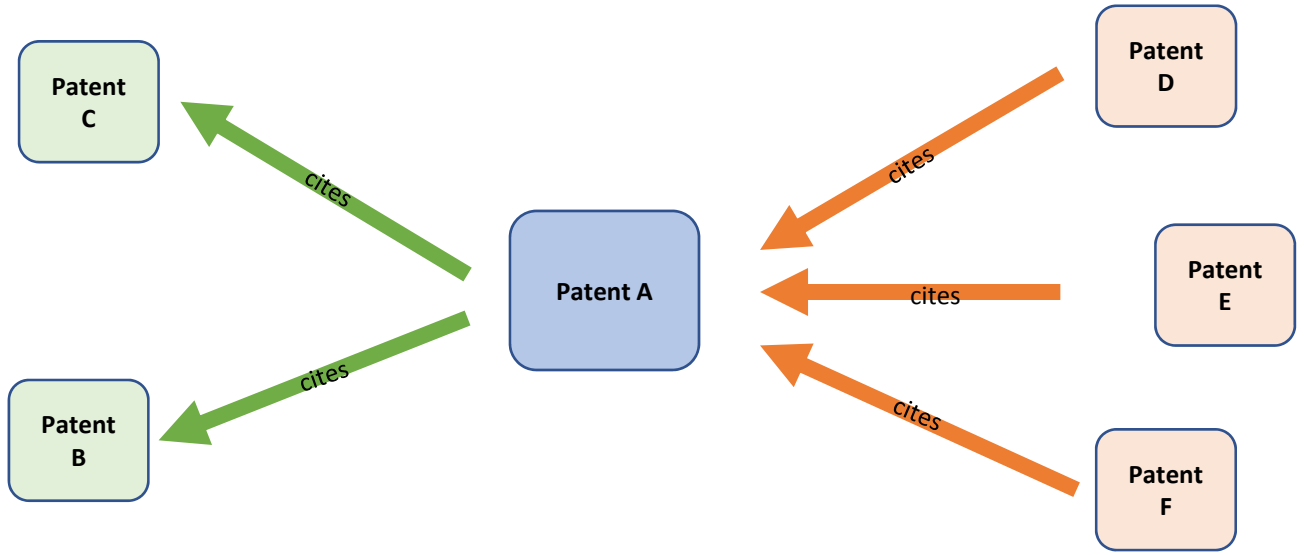
Metric	Definition
Patenting Rate	Number of successful applications/year
Forward Citations	Number of citations received from later patents
Generality	Technological diversity of forward citations
Backward Citations	Number of citations made to previous patents
Originality	Technological diversity of backward citations

Patenting Rate Across Inventors



- Patenting peaks in 40s for men; late 30s for women
- Normalized by year of patent to adjust for changes in number of patents over time

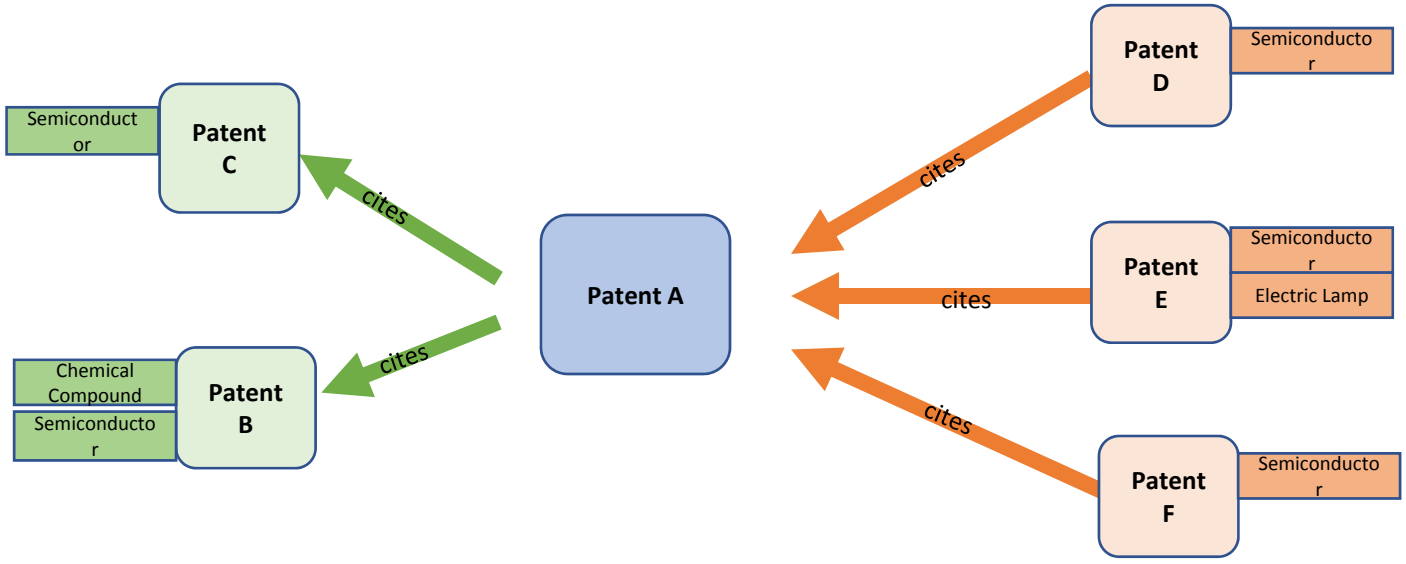
Patent Attributes (Quality and Impact)



Backward Citations

Forward Citations

Patent Attributes (Quality and Impact)



Originality

Generality

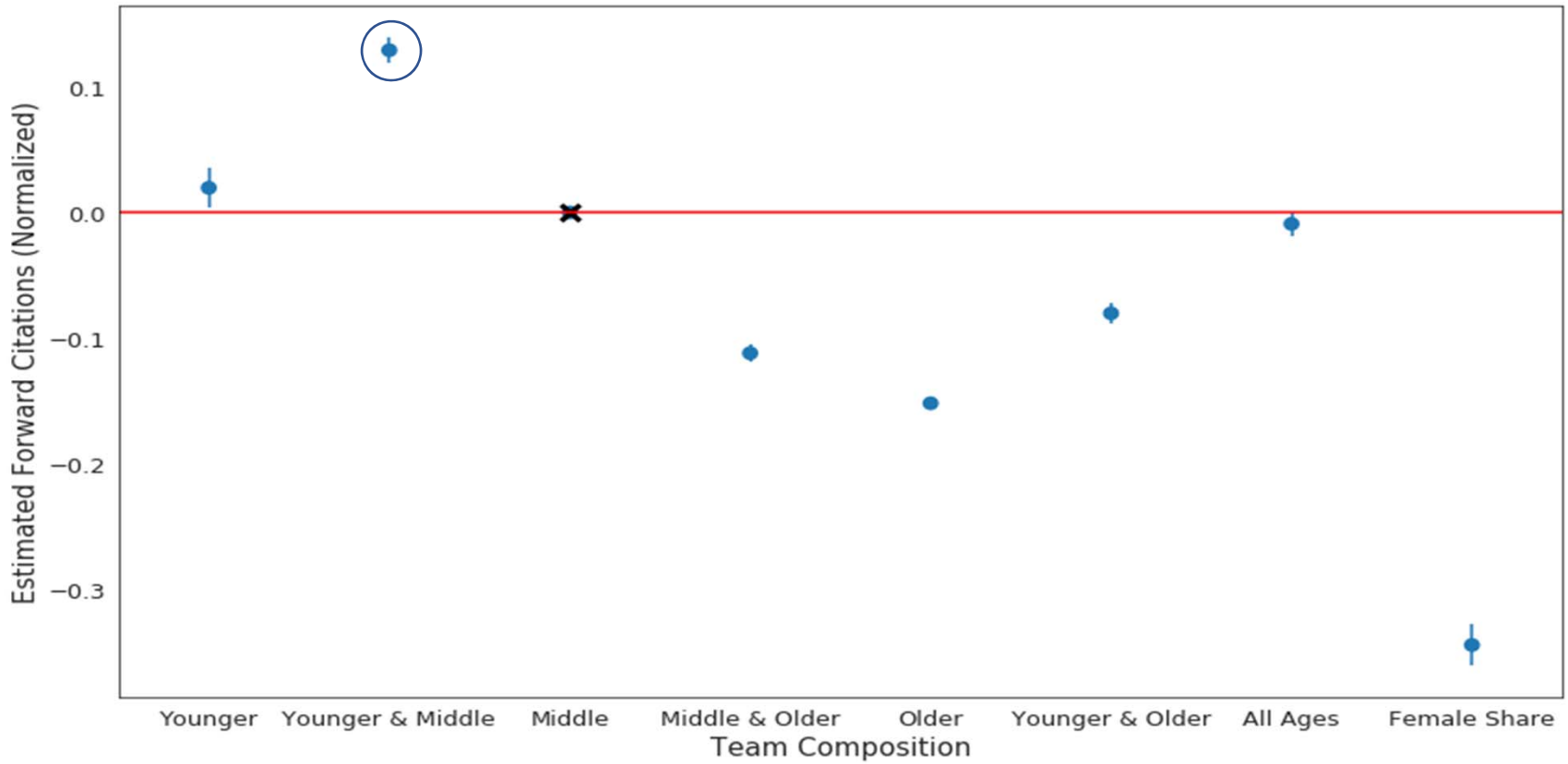
Age Composition of Teams

- Possible complementarity in teams comprised of different ages
- Combining strengths of fluid and crystallized intelligence
- Do age-heterogeneous teams produce higher level on attributes of patents than age homogeneous inventor teams?

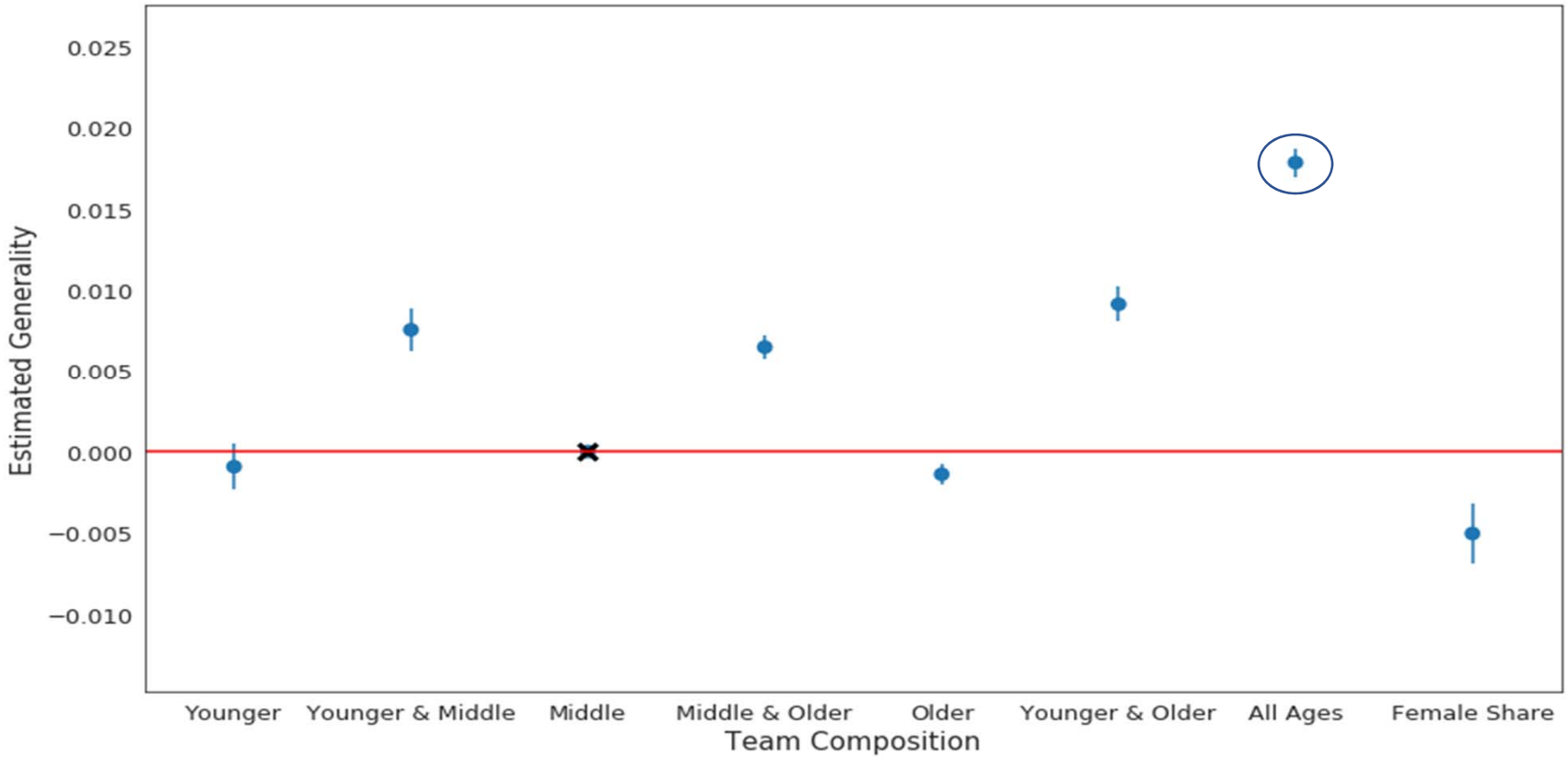
Age Groups:

- Younger <30
- Middle-aged 30-49
- Older 50+

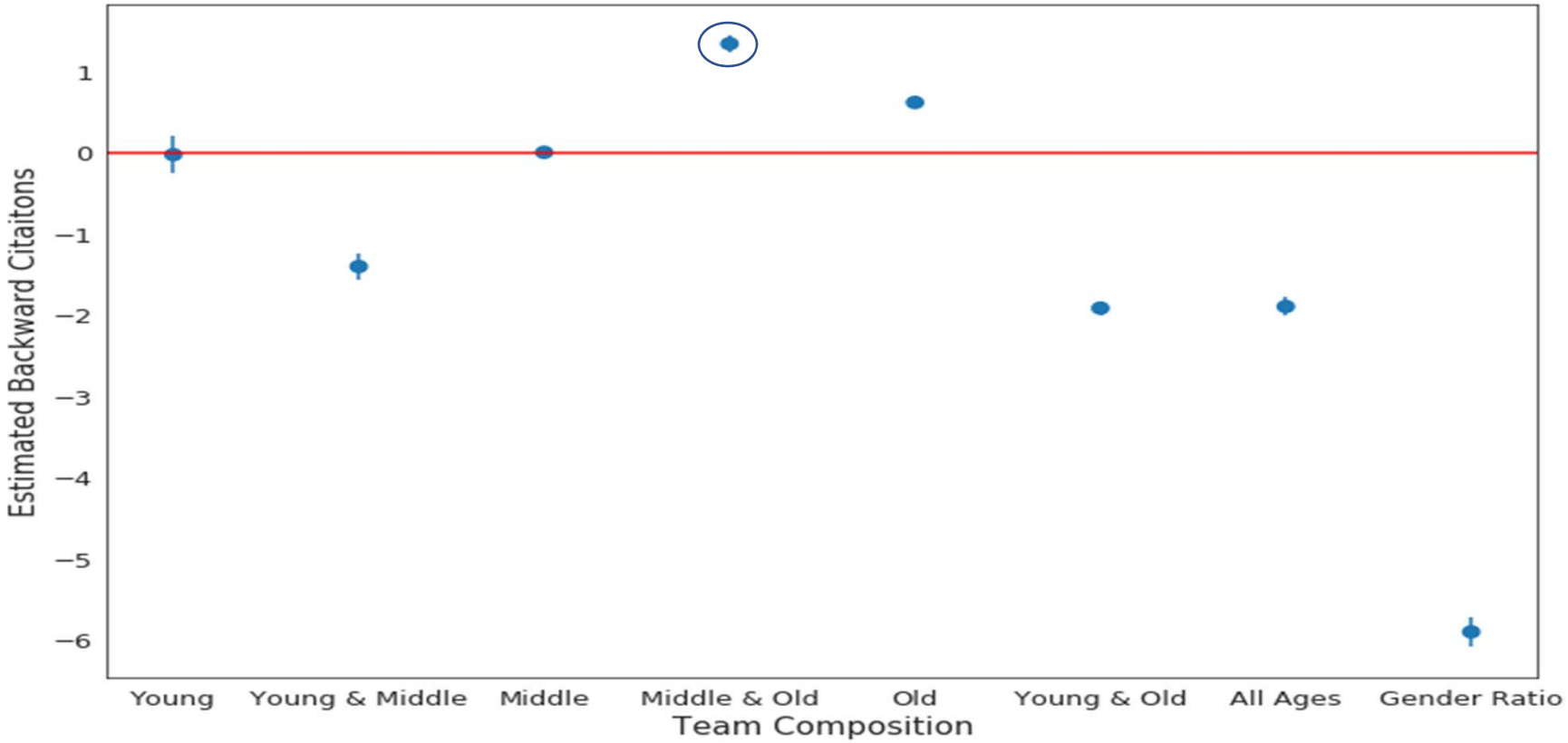
Age Composition of Teams & Forward Citations



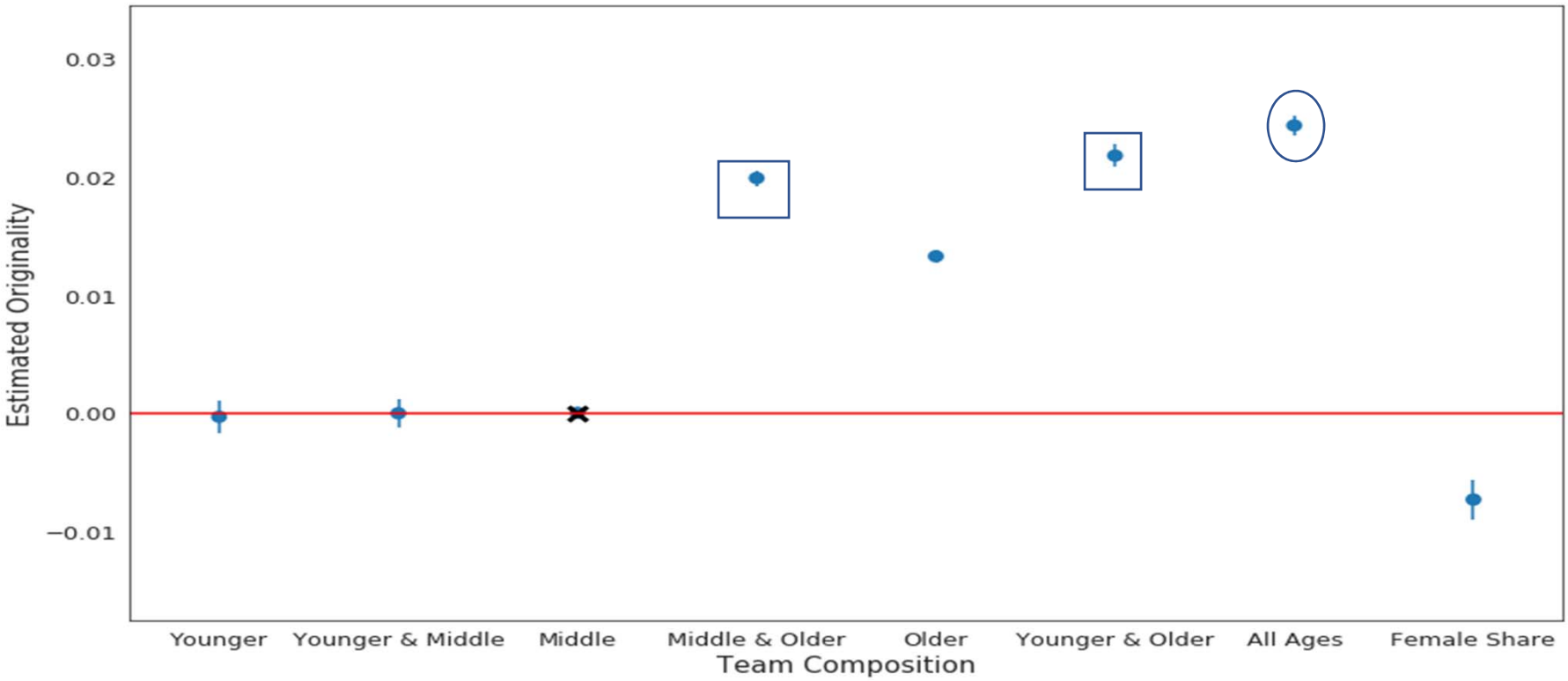
Age Composition of Teams and Generality



Age Composition of Teams and Backward Citations



Age Composition of Teams and Originality



Age Composition of Teams

- Some evidence that age heterogenous teams score higher on key attributes.
- For single inventors and age homogeneous teams, older adults do better on backwards citations and younger adults do better on forward citations.

Conclusions

- Work can provide experiences and resources that are protective for maintaining health and cognitive abilities
- Psychosocial and behavioral protective factors are effective for those with lower SES
- Older workers can bring positive features to the workplace
- Age heterogeneous teams seem to be at an advantage for some indices of innovation (patented inventions)

Next steps for research

- How do individual differences matter for work decisions and health outcomes: Explore the role of personality
- Does adaptive retirement require finding substitutes for work-related benefits: Cognitive stimulation, Social contact, Sense of purpose
  - Compare effects of working longer vs. retirement What if retirees find substitute activities to support health
- Do both younger and older workers benefit from working together? There is some evidence from patents. Does this hold up in other domains. How does this vary by type of work?