Aging, self-regulation, and cognitive success

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Aging, Self-Regulation and Cognitive Success

Dr. Carla M. Strickland-Hughes
UC Riverside Developmental Psychology Brown Bag Seminar
October 8, 2018

For the First Time in U.S. History Older Adults Are Projected to Outnumber Children by 2035

Projected percentage of population

<table>
<thead>
<tr>
<th>Year</th>
<th>Children under 18</th>
<th>Adults 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>19.8%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2025</td>
<td>19.8%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2030</td>
<td>19.8%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2035</td>
<td>19.8%</td>
<td>22.8%</td>
</tr>
</tbody>
</table>

Projected number (millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Children under 18</th>
<th>Adults 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>49.2</td>
<td>73.6</td>
</tr>
<tr>
<td>2025</td>
<td>78.0</td>
<td>76.4</td>
</tr>
<tr>
<td>2030</td>
<td>76.4</td>
<td>79.8</td>
</tr>
<tr>
<td>2035</td>
<td>79.8</td>
<td>94.7</td>
</tr>
</tbody>
</table>

Note: 2016 data are estimates not projections.

United States Census Bureau, 2018

Cross-Sectional Data

Longitudinal Data

Nyberg, Lövdén, Riklund, Lindenberger, & Blackman, 2012

Hertzog, Kramer, Wilson, & Lindenberger, 2009

Estimated Memory Change (T score)

Estimated Memory Change (T score)

Hertzog, Kramer, Wilson, & Lindenberger, 2009

Estimated Memory Change (T score)

Estimated Memory Change (T score)

Hertzog, Kramer, Wilson, & Lindenberger, 2009
Successful self-regulation

- Personal beliefs and environmental feedback affect choices about behavior, which has cognitive consequences

Personal beliefs affect behavior, which has cognitive consequences

Research program

1. Personal beliefs about aging which may limit cognitive success
2. Self-regulatory factors that promote cognitive success
3. Ways to enhance everyday memory through training

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Personal beliefs about aging which may limit cognitive success

Attitudes influence behavior (which influences attitudes of others)
- Ageism
- Prejudice
- Discrimination
- 77% older adults experienced ageism

Negative aging attitudes in younger adults are later threat
- **Worse performance:** memory, handwriting, walking speed
- **Detrimental health outcomes:** poor recovery from disability (+), more strokes (+), heart attacks (+), and Alzheimer’s (+)
- **Reduced longevity:** 7.5 years

Hess, 2006; Nelson, 2004

Hess, 2006; Nelson, 2004

Hummert, 2011

Levy et al., 2012; Levy et al. 2015
Changing aging attitudes

- Reducing negative aging attitudes
- Enhancing positive aging attitudes

How?
+ knowledge: – stereotyping
+ contact: – negative attitudes

Research questions

Age Stereotypes and Knowledge (ASK) Study
1. How is ageism related to aging beliefs and experience in younger adults?
2. Are aging beliefs more positive with increased aging knowledge?

ASK Study Design

- Online surveys
- **2 time points** in 15-week-long semester
  - First week (pretest)
  - Last week (posttest)
- **2 groups:**
  - Aging Class
  - Control Class

Psychology of Aging

- **Objectives**
  - Normative aging
  - Multidirectional
  - Multidimensional
  - Multiple influences
  - Age ≠ bad
  - Aging doesn’t begin when you’re old
- **Format**
  - Didactic instruction and in-class activities
  - Student presentations
  - Examinations
  - Comprehensive essays
  - Interaction with older adults
  - Death over Dinner

ASK Methods: Measures

- Ageism
- Ratings of older faces
- Implicit age attitudes
  - Positive
  - Negative
- Aging anxiety
- Contact with older men and women

Predicting ageism at pretest

- Lower ageism explained by
  - More frequent quality contact, $\beta = -.25, p < .05$
  - More positive face ratings, $\beta = -.26, p < .05$
  - Elevated positive attitudes, $\beta = -.27, p < .05$
  - Less aging anxiety, $\beta = .39, p < .05$
  - Aging anxiety relatively most important
  - Negative attitudes not important, $\beta = .10, p > .05$
- Explained 51% variance in ageism

Regression assumptions met.
Enhancing aging beliefs

Increased knowledge reduced negative attitudes

$F(1,55) = 6.76, \ p = .01, \ \eta^2 = .11$

Enhancing aging beliefs

Increased lessened aging anxiety (psychological)

$F(1,56) = 4.48, \ p = .04, \ \eta^2 = .07$

Formal education can enhance aging attitudes!

- Quality contact with older persons not enough
- Aging anxiety important target
- Positive vs. negative attitudes

**Replication:** Data analysis underway
- Increased intergenerational contract
- Emphasized control overall aging
- Smaller, but more diverse, sample

Research program

1. Personal beliefs about aging which may limit cognitive success
2. Self-regulatory factors that promote cognitive success
3. Ways to enhance everyday memory through training

Self-regulatory factors and cognitive success

- Targeted self-regulatory factors
- Goal-setting & feedback
- Self-evaluative beliefs
- Future expectations
- Positive correlates of memory
- Decline with increased age

Strickland-Hughes, West, Smith, & Elber, 2016; West, Strickland-Hughes, & Smith, under revision; Tasdemir-Ozdes, Strickland-Hughes, Bluck & Elber, 2016
**Name memory**
- Highly valued
- Difficult for adults of all ages
- Performance declines with increased age

**Feedback and memory**
- Mixed effects reported
  - Complex interaction with personal beliefs
- More influential for younger than older adults
- Positive feedback may be motivating
  - Especially with high memory self-efficacy

**Memory self-efficacy (MSE)**
- Predicts current and future memory (6 yrs.)
- Decreased by negative stereotyping
- Old < young

**Research aims**

1. **Feedback and Faces Study**
   - Examine influence of false performance feedback on younger and older adults name memory
2. Test impact of feedback on personal beliefs and indirect effects of feedback on memory through personal beliefs

**Design and procedure**

**Mixed-model design**
- 2 age (between: YA, OA)
- 3 feedback conditions (between: P, N, C)
- 2 name memory (within: recognition, recall)

**Outcomes**
- Memory task with feedback
- Personal beliefs assessed before and after

**Procedure**

**Encoding**
- [Image of encoding process]

**Testing**
- [Image of testing process]
Congratulations!
Your Score: 92th percentile for your age group

Thank you.
Your Score: 34th percentile for your age group

**Results**

Better name recall and greater memory self-efficacy with positive feedback

Hypothesized mediation model

FB = Feedback. INDIRECT script, Preacher & Hayes, 2008
Positive feedback → higher posttest MSE → better name recall

Total $R^2 = .44$, $p < .001$

$a_1 \times b_1 = .62$, BCCI $1.15 - 1.34$

Posttest Memory Efficacy

$7.86^{***}$

Positive Feedback Condition

$.01^a$

Posttest Proportional Subjective Age

-.08 (1.4$^*$)

Name Recall

$.80$

$2.86$

BCCI = Bias corrected confidence interval. FB = Feedback.

2. Self-regulatory factors and cognitive success

- Feedback (environmental) affects beliefs (personal) and memory performance (behavior)
- Positive feedback → memory self-efficacy → name recall memory

Research program

1. Personal beliefs about aging which may limit cognitive success
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Ways to enhance everyday memory through training

- Strategy use for episodic memory
  - Effective for older persons
  - Gains in trained abilities
  - Immediately after training
- Assumption memory gains reflect effective strategy use

Self-regulation in training

Two considerations
- Enhanced from training
- Value-added to training

Self-regulation in training

Focus on 2 self-regulatory factors
- Memory self-efficacy (personal)
- Strategy use (behavior)

- Positive correlates of memory performance
  - Relationship strengthens with age
  - Old < young
  - Underlie training gains in performance

Strickland-Hughes & West, 2017; West & Strickland-Hughes, 2016

Strickland-Hughes & West, in press; West & Strickland-Hughes, 2016

Agrigoroaei et al., 2013; Beaudoin & Desrichard, 2010; Cavallini et al., 2010; Gross & Rebok, 2011
Aims and hypotheses

Key issue: Evaluate abbreviated version of tested effective program

1. Targeted task
2. Self-regulatory factors
   - Memory self-efficacy
   - Effective strategy use
3. Near transfer

Participants (N = 122)

Recruited (n = 174)
Excluded (n = 52)
   - TICS below cut-off (n = 21)
   - Declined: Scheduling issues (n = 10)
   - Illness (n = 9)
   - Death in family (n = 2)
   - Unspecified (n = 2)
   - Unable to follow directions (n = 8)

Randomly assigned (n = 122)
CT (n = 38)
SO (n = 46)
SB (n = 38)

Procedure

<table>
<thead>
<tr>
<th>Week</th>
<th>Groups</th>
<th>Agenda</th>
<th>Self-reg elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>All</td>
<td>Phone interview</td>
<td>n/a</td>
</tr>
<tr>
<td>1</td>
<td>All</td>
<td>Pretest assessment</td>
<td>n/a</td>
</tr>
</tbody>
</table>
| 2    | Strategy + beliefs (SB)        | A. 2-hr group training session
   |        | B. ~ 2 - 3 hrs self-study workbook | ✓ + |
|      | Strategy - only (SO)           | A. 2-hr group training session
   |        | B. ~ 2 - 3 hrs self-study workbook | ✓ |
|      | Control (CT)                    | No meeting, homework, activity | x |
| 3    | All    | Posttest assessment           | n/a               |

Training elements to enhance self-regulation

- Enactive mastery
  - Repeated practice
- Vicarious experience
  - Trainer models technique and whole group practices together
- Verbal persuasion
  - Group provides social support
- Physiologic and affective states
  - At home materials allowed for self-paced practice

Pre-post assessments

Target outcome
- Name recall

Self-regulatory factors
- Strategies checklist
- Memory self-efficacy

Transfer outcomes
- Object-location visual association
- Occupation-name verbal association

Blind Timed memory assessments and self-paced surveys
Duration: 2 hours

Effectiveness of brief training

Yes, abbreviated name recall training effective:
1. Enhanced name recall performance
2. Improved self-regulatory factors
3. Near transfer effects

Bandura, 1997; Smith & West, 2006; West et al., 2008
**Brief training effective beyond target task**

1. Enhanced self-regulatory factors
   - Key to maximizing training impact
2. Near transfer effects
   - Contradicts “generalist assumption”

- “Bang for buck”
- Ease of broad dissemination
- Possible translation of benefits from laboratory to everyday life

**Aging, self-regulation, and cognitive success**

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**Future directions**

- Variance in antecedents of ageism across adulthood and ethnic groups?
- Impact of varied types of feedback (e.g., objective, self-appraisal) on cognitive success
- Effect of memory training on aging attitudes and on impact of negative effects of aging attitudes (e.g., stereotype threat)
- Differential self-regulatory benefits (immediate and long-term) from training with/out goals and feedback and varied comparison groups (e.g., self-study, social control)

**Current Projects**

- ASK 2.0: Replication
- IDEA
- Stereotype threat

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