Personal Control Beliefs and Memory in Aging: Mediation by Health and Lifestyle

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Introduction

Memory decline in aging is not universal but rather impacted by idiosyncratic factors

- Perceived control relates to multiple spheres of life functioning involving personal outcomes such as health, cognitive functioning, neuroanatomical functioning, or interpersonal relationships. *(Maggio et al., 2018)*

- Control beliefs can be evaluated on a global or domain-specific level, such as memory tasks. Both global and specific control beliefs are related to memory and aging.

- Memory performance is specific to lifestyle behaviors that can be driven by our attitudes, engagement, strategy use, and control beliefs.
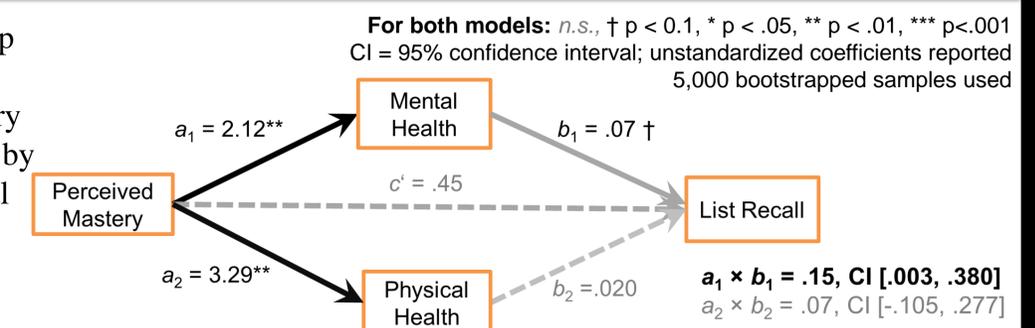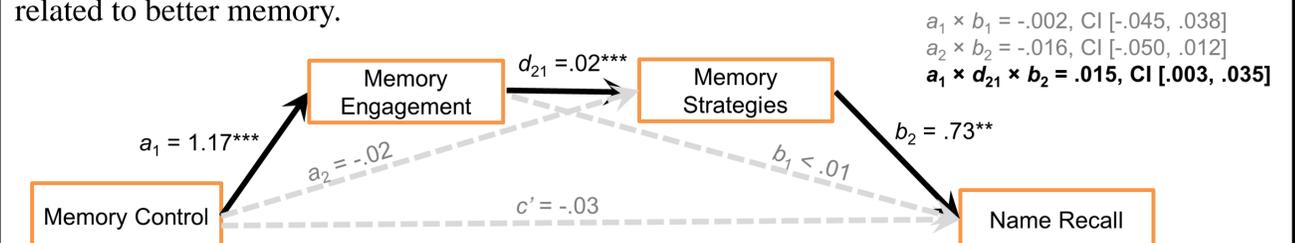
Research Aims

1. *Test whether the relationship between control beliefs and memory are mediated by mental health and physical health*
   - We hypothesize that higher levels of control beliefs, physical health, and mental health will be associated with higher episodic memory performance.

2. *Test whether the relationship between control beliefs and memory are mediated by overall engagement in memory activities and specific strategy use*
   - We hypothesize that the relationship between control beliefs and memory will be mediated by higher engagement in memory activities and strategy use.

Methods

Study Design

- Correlational; statistical approach: path analyses of serial and parallel mediation models *Hayes, 2014*

Participants

- $N = 122$ (Male: 21.5%, Female: 78.5%), adults, 50 + years old, education ranged from 11 to 27 years (M=17.33, SD=2.84)

- Healthy, community-dwelling adults free from cognitive impairment from north-central Florida recruited through newspaper advertisement, recruitment flyers, and recruitment handouts

Measures

Perceived Mastery: 5 items on a 6-point scale; extent to which one has control over success and/or failure *Lachman & Weaver, 1998*
- *Ex: I can do just about anything I really set my mind to*

Memory Control Beliefs: 9 items on a 5-point scale; perceived sense of control over memory skills *Dixon et al., 1998*
- *Ex: I have little control over my memory ability*

Health Survey (SF-12): 12-items with various response scales (e.g., 6-point, dichotomous); self-reported **physical** and **mental** health *Ware, Kosinski, & Keller. 1996*
- *Ex: Does your health now limit you in climbing several flights or stairs?*
- *Ex: How much of the time during the past 4 weeks have you felt downhearted and blue?*

Memory Engagement: 4 items on a 9-point scale; frequency of cognitive exercise *Strickland-Hughes, 2017*
- *Ex: Exercise my memory with computer games*

Strategy Use: 16-item prospective checklist to indicate the strategies used during the FNA task *West et al., 2008*
- *Ex: I created an image in my mind of the face*

Episodic Memory: Recall of new information
- **List recall:** 15 high-frequency words; read 1 second apart; asked to recall 20-30 minutes later (delayed) *Strickland-Hughes, 2017*
- **Face-name association (FNA):** 24 pairs of faces and first names; 5 min. for encoding and 5 min. for immediate recall *West et al., 2008*

Results

Aim 1: Relationship between perceived mastery and memory was fully mediated by self-reported mental health and physical health.

For both models: *n.s.,* † p < 0.1, * p < .05, ** p < .01, *** p<.001
CI = 95% confidence interval; unstandardized coefficients reported
5,000 bootstrapped samples used

$a_1 \times b_1 = .15$, CI [.003, .380]
$a_2 \times b_2 = .07$, CI [-.105, .277]

Aim 2: Higher levels of memory control beliefs were related to greater engagement in memory activities, which in turn was related to greater strategy use, and greater strategy use related to better memory.

$a_1 \times b_1 = -.002$, CI [-.045, .038]
$a_2 \times b_2 = -.016$, CI [-.050, .012]
$a_1 \times d_{21} \times b_2 = .015$, CI [.003, .035]

Discussion

- Global and domain-specific control beliefs may shape memory in aging.
- Our beliefs might related to performance because of their relationship with a variety of personal and behavioral factors.
- Cognitive interventions should target changes in beliefs, not just techniques.
- **Limitations:** High percentage of Caucasian females; High reported years of education
- **Future research:** Further investigate how perceived control and engaging in cognitive activities maintain quality cognitive health.

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