Neuropsychological Functioning Predicts Hindsight Bias in Older Adults

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INTRODUCTION

• Hindsight bias has been defined as “... the tendency to believe, once an outcome has occurred, that we knew all along how it would turn out” (Bryan & Gaubault, 2002, p. 27, Fischhoff, 1975).

• Many studies have demonstrated a robust hindsight bias effect in younger adults, but few studies have examined hindsight bias in older adults.

• Due to age-related declines in various aspects of cognitive functioning (e.g. memory, executive functions), older adults may have an increased susceptibility to hindsight bias.

RESEARCH QUESTIONS

1. Do older adults show hindsight bias?
2. Do basic mental abilities (long-term memory, working memory, inhibitory control, retroactive interference) predict hindsight bias in older adults?

METHODS

Participants

• Sixty participants (Mean age = 72.5 years, range = 65-87) completed the study.

Measures

Hindsight Bias Measure

• Participants completed the memory design task, a common test of Hindsight Bias (Hertwig, Gigerenzer, & Hoffrage, 1997). This task consists of two questionnaires, the Original Judgement Questionnaire and the Recall of Original Judgement Questionnaire:

  • Original Judgement Questionnaire: Participants estimated the answers to 53 difficult general knowledge questions (adapted from Burny et al., 2006; Hardt & Pohl, 2003) that required a numerical response (e.g. How long is the Amazon River?)

  • Recall of Original Judgement Questionnaire: After a 90-minute delay, participants recalled their original estimates to the 53 questions. Half of the questions were presented with the correct answer (experimental items) while the other half were not (control items).

Experimental Item Example:

At what temperature does Copper melt?

Control Item Example:

How high is the Statue of Liberty including its base?

What was your original answer?

Celsius

Neuropsychological Functioning Measures

• In the 90-minute delay, the following neuropsychological measures were administered:

  • Episodic Memory: Wechsler Adult Intelligence Scale 3rd Edition (WAIS-III) – Backward Digit Span and Letter-Number Sequencing subtests

  • Inhibitory Control: Delis-Kaplan Executive Function System (D-KEFS) – Color/Word Interference subtest

  • Various measures of perspective-taking (i.e. Theory of Mind) and other cognitive abilities were also assessed as part of a larger study.

RESULTS

• A one-sample t-test revealed a large hindsight bias effect (t(59) = 5.45, p < .001, d = .70).

• Bivariate correlations were used to determine which basic mental abilities (long-term memory, working memory, inhibitory control, retroactive interference) were associated with hindsight bias. Poorer inhibitory control (r = .35, p < .01) and long-term memory (r = .26, p < .05) were moderately and significantly correlated with greater hindsight bias (see Figure 1 and 2). All other cognitive variables were only weakly (r < .11) correlated with hindsight bias, and thus were not further analyzed.

• Multiple regression analysis was conducted with hindsight bias as the dependent variable, and long-term memory and inhibitory control as the independent variables (see Table 1):

  - The full model accounted for 14% of the variance (F(2,57) = 4.73, p < .05) in hindsight bias.

  - Poorer inhibitory control was a significant predictor of greater hindsight bias (β = 2.22, p < .05).

CONCLUSIONS AND FUTURE DIRECTIONS

• Older adults exhibited hindsight bias on a standard memory design task.

• Poorer performance on tests of long-term memory and inhibitory control was associated with greater hindsight bias.

• Poorer inhibitory control predicted greater hindsight bias. This finding suggests that older adults with less efficient inhibitory processes may have an increased susceptibility to hindsight bias.

• Future studies should investigate whether hindsight bias impacts important life decisions (e.g. financial and medical) that are often encountered later in life.

REFERENCES


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