Abstract

In a longitudinal study using undergraduates (N=836), we examined the abilities of objective (ONS) and subjective (SNS) numeracy to predict financial outcomes. We hypothesized that being more proficient in ONS and/or SNS would be associated with better financial outcomes due to superior calculations (ONS) and/or greater motivation (SNS). Additionally, we manipulated numeracy (taking a statistics course vs. not) to investigate possible improvements, in ONS, SNS, and financial outcomes over the semester. Results indicated that taking the statistics course protected students from detrimental changes in SNS and lower scores in SNS predicted detrimental changes in financial outcomes over the semester. Additionally, taking a statistics course appeared to provide a protective effect to detrimental changes in financial outcomes one year later.

Methods

Students enrolled in a statistics (N=290) or introductory psychology course (N=546) completed the following measures at three time points:

- Subjective Numeracy 
- Objective Numeracy 
- Financial Outcomes 
- Working Memory 
- Vocabulary 
- Demographics

Results

- ONS – 18-item math test (Weller et al., 2013)
  - e.g., “If the chance of getting a disease is 10%, how many people would be expected to get the disease out of 100?”
- SNS – 8-item self report (Fagerlin et al., 2007)
  - e.g., “How good are you at working with percentages?”
- 10 Negative Financial Outcomes
  - e.g., “had an overdraft or bounced check?”
  - e.g., “experienced more than $5,000 in credit card debt?”
- Financial Outcome Score = % of negative outcomes experienced across the items

Second Aim: Does taking a statistics course improve objective or subjective numeracy?

- Statistics training did not improve ONS over the semester.
- Statistics training provided a small protective effect to declines in SNS over the semester (p<.05). Statistics students had stable SNS (mean∆= -.06, CI -.14 to .03), but non-statistics students decreased in SNS (mean∆= -.15, CI -.21 to -.09). Declines in SNS predicted increases in negative financial outcomes over the semester (p<.01). The indirect effect, however, was NS.

What happens a year later?

- Statistics training provided a small protective effect on financial outcomes one year later (p<.05, N=247, Figure 3).
- No significant effects involving ONS or SNS by statistics condition.

Results Continued

Figure 2. Non-Stats students increased in negative financial outcomes a year later and Stats students remained stable. Error bars indicate SE of the means.

Discussion

Subjective Numeracy Matters

A person’s belief in their numeric ability was more important than actual ability in predicting financial outcomes and changes in those outcomes over time.

Benefits of Taking a Statistics Course

Statistics training provided a protective effect to detrimental changes in SNS during the semester and in financial outcomes a year later.

Future Analyses

Finished collecting and coding students’ academic courses taken and grades received. Next steps include incorporating this academic data into analyses.

References


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