The stability of objective numeracy: A seven-year longitudinal study

Main Findings:
- **Objective Numeracy** significantly decreases over time.
- Gender and **Numerical and Literacy IQ** are positive predictors of **Numeracy**.
- **IQ** was found to be a (marginally) negative predictor of slope.
- **Gender** was a significant positive predictor of numeracy such that being male predicted a higher initial objective numeracy score.
- Numerical and Literacy IQ measures were positive predictors of initial numeracy scores.
- **IQ** was found to be a (marginally) negative predictor of slope.

Methods:
The Decision Research web panel, a diverse sample of US citizens, was surveyed 3 times (in unrelated studies) over the course of 7 years. The panel completed the first assessment in 2008 (N=1283), the second in 2013 (N=575), and the third in 2015 (N=639). 204 participants completed all three waves. Each assessment contained the 8-item scale from Weller et al., (2013). We also included measures of IQ (T2) and subjective numeracy (T3).

Results – Correlations & Descriptives:
- Correlations (Means & SD on Diagonal) (N=204)
- There was little variance in the slopes displayed over a period of 7 years.

Results – Modeling Cont.
- Significant overall negative trend in objective numeracy over time
- Gender was a significant positive predictor of numeracy such that being male predicted a higher initial objective numeracy score.
- Numerical and Literacy IQ measures were positive predictors of initial numeracy scores.
- IQ was found to be a (marginally) negative predictor of slope.

Conclusions:
- Ground research has examined individuals’ objective numeracy skills over several years time.
- Over a period of 7 years, we observed a significant linear decline in objective numeracy.
- There was little variance in the slopes displayed between individuals (figure above).
- Consistent with prior research, men tended to display higher initial numeracy scores than women.
- IQ may moderate changes in objective numeracy over time.
- We did not find differences in objective numeracy over time related to age or education, as suggested in other literature.
- Further research is needed to determine causal relationships and replicate to these findings.

Select References:

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