Neurons die, not knowledge: Domain knowledge compensates for declining cognitive ability in financial decision-making

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Abstract

•Paradox: Older adults make good decisions despite declining cognitive abilities.

•Complementary Capabilities framework (CC; Li et al, 2013) – suggests that crystallized intelligence (G_c) may compensate for lower fluid intelligence (G_f) in older adults.

•Specifically, improved financial-domain G_c accounts for the positive effect of age on credit scores.

Introduction

•Credit scores are a measure of credit-worthiness, and summarize multiple factors in one's credit history. Empirically they increase with age.

•The implied improvement in financial decision-making skill with age, despite cognitive decline, may be due to multiple causes.

•Goal 1: Replicate CC framework results with continuous age.

•Goal 2: Extend the CC framework to real world financial behavior, specific G_c

Methods

• Sample: 619 US residents (ages 18-83, M = 45.52, SD = 16.28, 61% female).

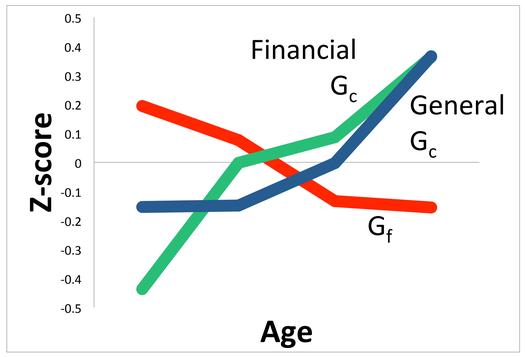
•Dependent variable: FICO credit scores* (range: 350 – 800).

•Structural equation modeling (SEM) is used to detect latent variables and establish multiple links.

Results

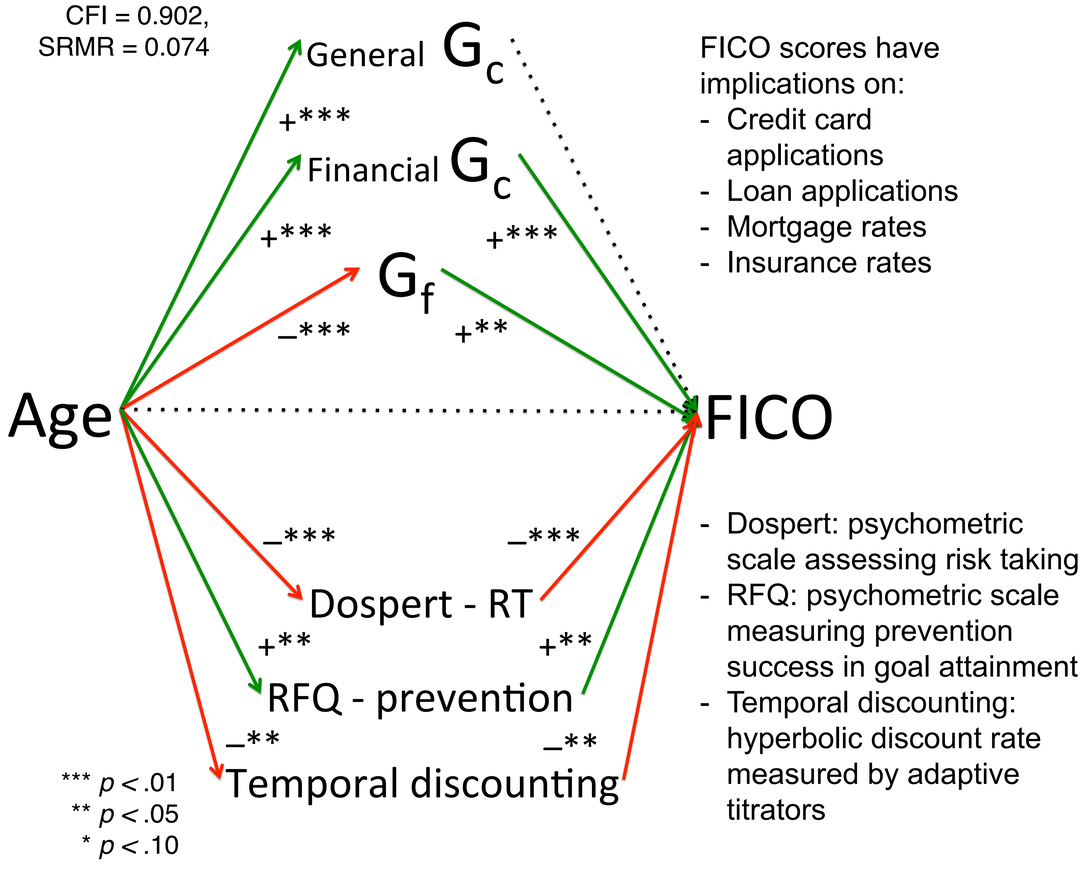
Factor loadings for latent variables

	G_f	General G_c	Financial G_c
CFI	**>0.99**	**>0.99**	**0.949**
SRMR	**<0.001**	**<0.001**	**0.053**
Raven's	0.757***		
Letter Series	0.711***		
Number Series	0.659***		
Synonym		0.847***	
Antonym		0.894***	
WAIS		0.575***	
Financial Literacy			0.707***
Investment Exp.			0.975***
Mortgage Exp.			0.678***



•G_f and both G_c's replicate the CC pattern with age ($\beta_{Gen\text{-}G_c}$ = 0.012***, $\beta_{Fin\text{-}G_c}$ = 0.015***, β_{G_f} = -0.008***)

SEM Path Diagram of FICO Predictors (insignificant paths omitted)



FICO scores have implications on:
- Credit card applications
- Loan applications
- Mortgage rates
- Insurance rates

- Dospert: psychometric scale assessing risk taking
- RFQ: psychometric scale measuring prevention success in goal attainment
- Temporal discounting: hyperbolic discount rate measured by adaptive titrators

•Model controls for other demographics including income and education

•The effect of age on credit scores is mediated by financial G_c (β = 0.392, $p < 0.001$) and G_f (β = 0.217, p = 0.017) and **not** by general G_c (β = 0.008, p = 0.931).

Economic phenotype and FICO

	β	p
Dospert	-.307	<.001***
RRA	-.070	.163
Lambda	.024	.571
Alpha	-.040	.354
Sigma	-.010	.822
Beta	.087	.066*
Delta	.111	.015**
RFQ	.105	.011**

•Regression controls for demographics, both types of G_c and G_f

•Economic "phenotype" measures, such as *relative risk aversion* (Holt & Laury, 2002) do **not** predict credit scores whereas psychological measures do.

Discussion

•The predictive power of financial G_c suggests that general G_c proxies for it in previous work (Li et al, 2013).

•Decrease in G_f calls for care in choice architecture for older adults.

•Psychological scales are significant predictors while traditional economical measures are not, though not all measures were incentive compatible.

References

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