

Abstract

What kinds of individuals seek out advice generated from an algorithmic (vs. a human) advisor?

We assess the hypothesis that cognitive style, as measured through the Cognitive Reflection Test (CRT), is associated with the suppression of System 1 biases against artificially intelligent agents.

In our research, we found that greater reflection, as measured through higher scores on the CRT, was associated with greater preference for advice from an algorithmic advisor, as opposed to a human advisor.

Introduction

- A large body of work has identified the *features* of advisors that cause “algorithmic aversion”, such as:
 - Adjustability¹, accuracy², task domain^{3, 4}, and task difficulty⁵
- However, recent research has found an overall preference for advice from AI, aka “algorithmic appreciation”⁶.
- Individual differences in users has been overlooked and could potentially help us make sense of the mixed literature.
- Cognitive style is a consequential individual difference:
 - Reliably relates to biases in judgments and decision making⁷, risk taking⁷, belief in fake news⁸, religiosity⁹, amongst others.

Research question

Is cognitive style related to preference for advice from an algorithmic advisor?

H₁: More analytical individuals prefer advice from an algorithmic advisor over advice from a human advisor

Methodology

Participants

US-based samples from Mechanical Turk

N: 183 (Study 1), 270 (Study 2), 221 (Study 3), 238 (Study 4)

Main measures

- 3 item Cognitive Reflection Test⁷ (Study 1, 2, 3) or 7 item CRT⁹ (Study 4)
- Advisor selection measure (% Advice from AI/Human)

Design

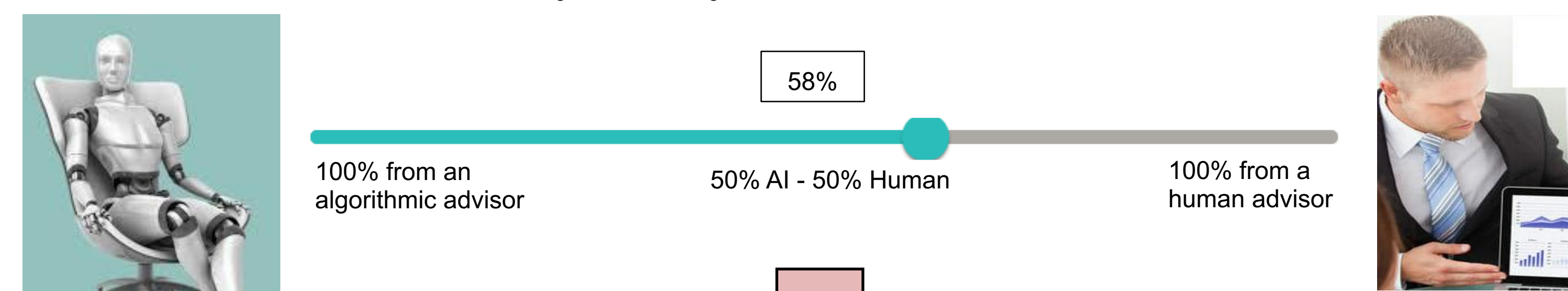
Cognitive Reflection Test

Financial decision-making scenario

We want you to imagine a scenario where you have an investment portfolio of financial assets. You have a range of different kinds of assets and you are looking for advice on how to manage them all.
We will give you the option to receive advice from an algorithmic financial advisor or from a human financial advisor. You will be able to choose the proportion of advice that you receive from each of them.

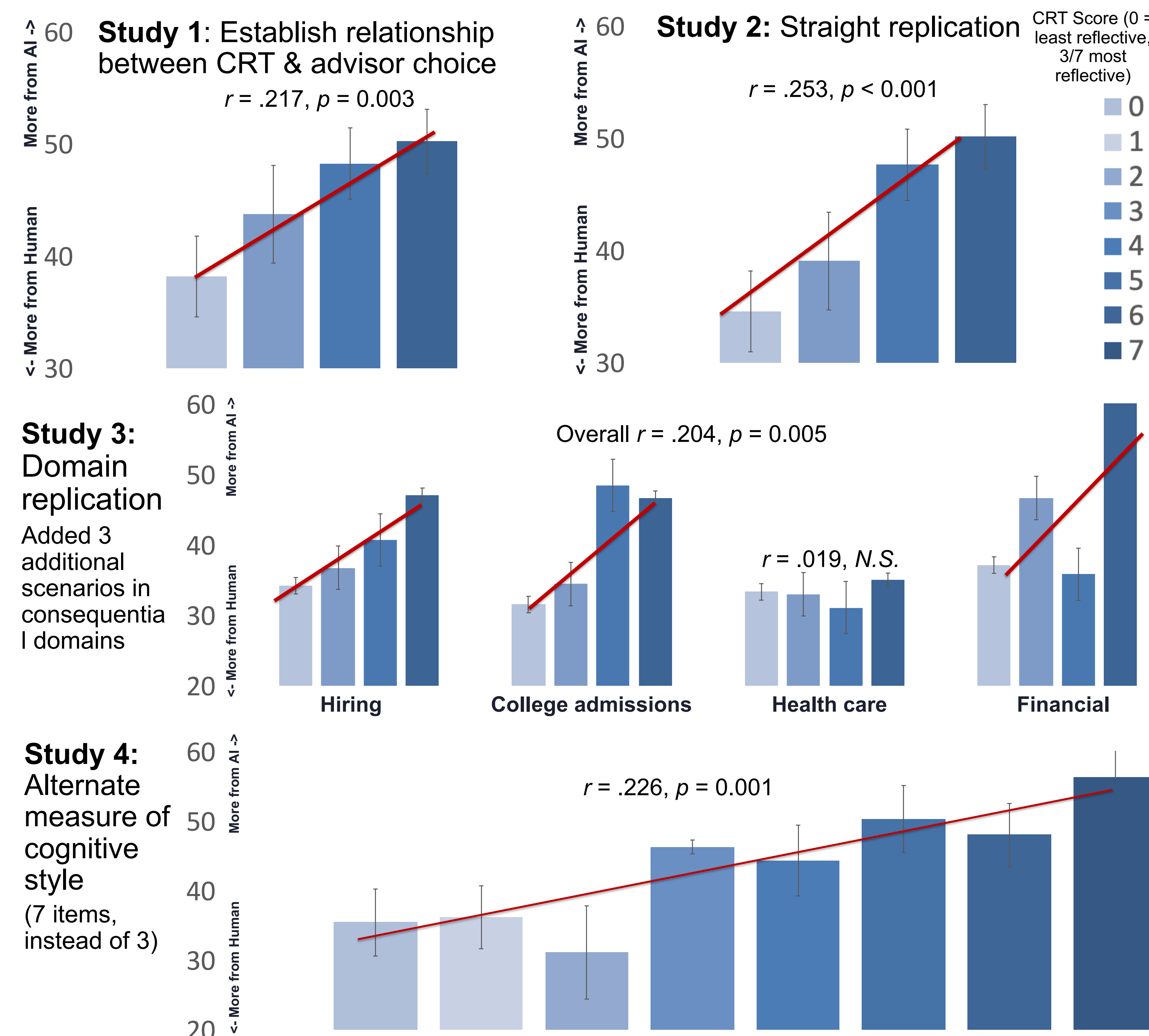
Advisor selection

Where would you like your financial advice to come from?



Demographics, controls (prior experience with AI, comfort with technology, social anxiety)

Results



Results summary

The more cognitively reflective individuals were, the more advice they sought from AI advisors

- Robust effect, consistently replicated (Studies 1-4)
- Across a variety of consequential decision-making domains (Study 3)
- Replicated using an alternate measure of cognitive reflection (Study 4)

Implications

- Implication: Seeking advice from AI agents may be easier** for those whose target audiences (consumers, employees) are naturally **higher in cognitive reflection**
- Alternatively, organizations wanting to **increase adoption** of AI advice seeking could take measures to **increase reflection** before decision-makers choose their advisors
- For researchers: Running studies on undergraduate samples may be biased in favor of AI technology, due to higher cognitive reflection among educated people.

References

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Questions or comments welcomed!
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