

HRI Reading Group

@ Instituto Superior Técnico
Spring 2019

Meeting #5 (22 Mar 2019)

Paper

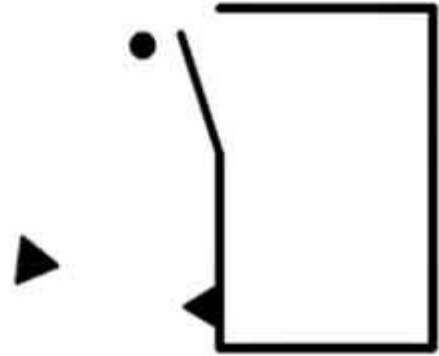
Nicholas Epley, Adam Waytz, and John T. Cacioppo, **On Seeing Human: A Three-Factor Theory of Anthropomorphism**, Psychological Review.

God
yes



Geometric shapes

yes

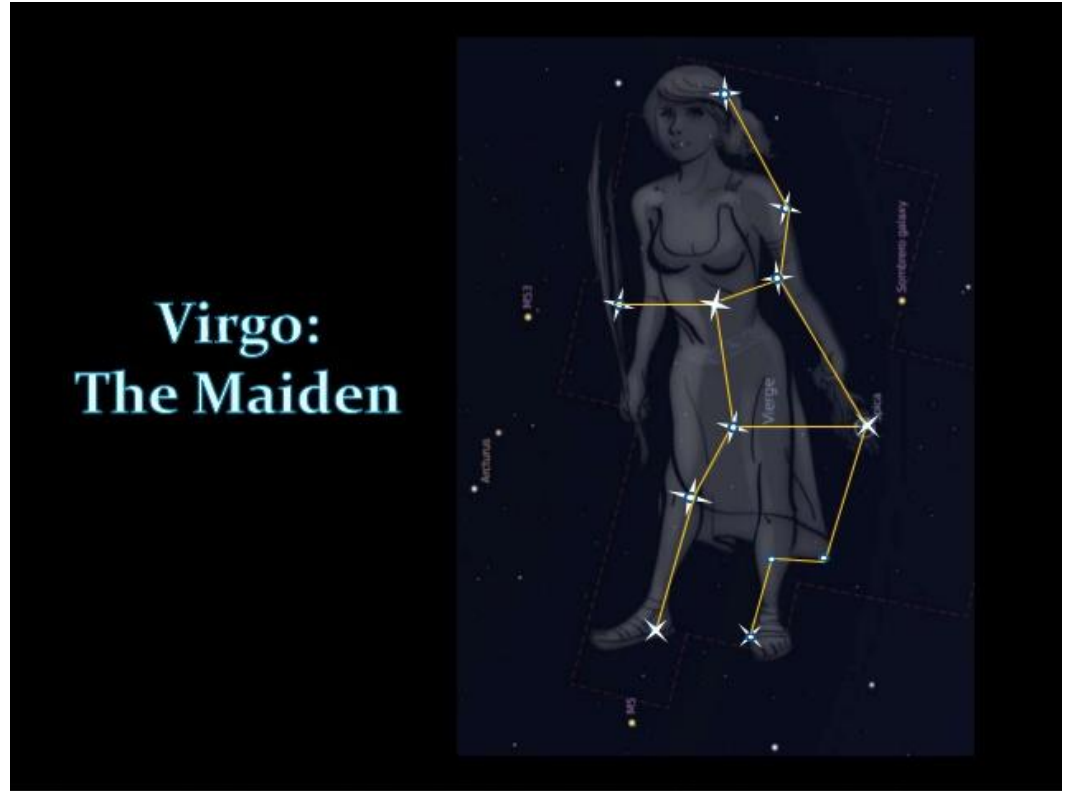


Car
yes



Constellations

yes



Cloud

Recognizing versus
attributing behavior

No



House
No



Anthropomorphism: What is it?



Inference, based on an inductive process.

Inference: reaching a conclusion based on evidence

In this case, the existence of aspects of human-like agency

Inductive process: adds semantic information (from memory) to the evidence in order to reach

anthropomorphism is an act of
humanization

seeing humanlike characteristics in
nonhuman agents

anthropomorphism is of
practical interest (...) because
it turns nonhuman agents into
moral agents

who deserve to be treated with
respect and concern

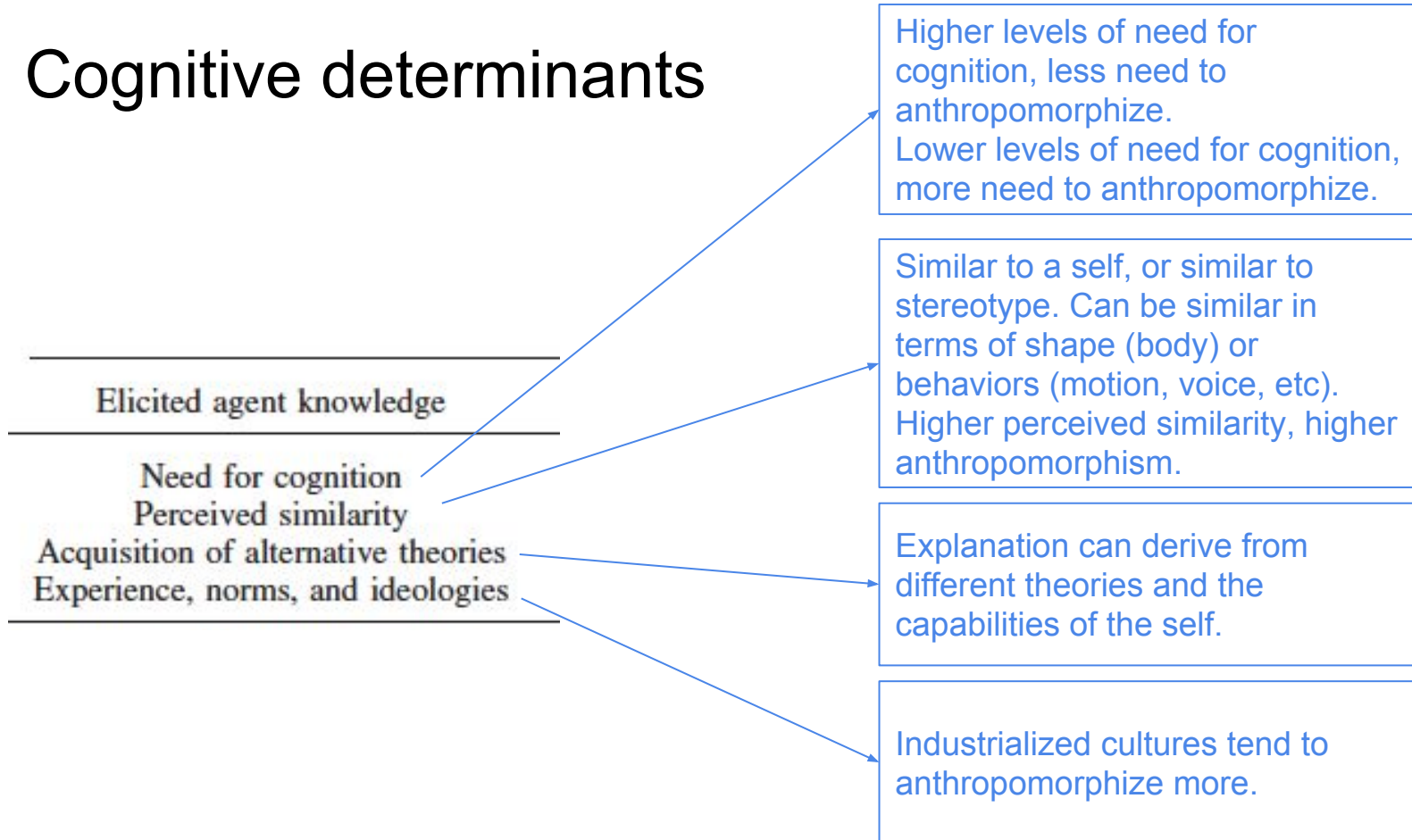
Three-factor psychological account

Key Psychological Determinants (Elicited Agent Knowledge, Effectance, and Sociality), Categories of Independent Variables, and Predicted Sources of Influence From Specific Independent Variables on Anthropomorphism

Categories of independent variables	Key psychological determinants		
	Elicited agent knowledge	Effectance motivation	Sociality motivation
Dispositional	Need for cognition	Need for closure, desire for control	Chronic loneliness
Situational	Perceived similarity	Anticipated interaction, apparent predictability	Social disconnection
Developmental	Acquisition of alternative theories	Attaining competence	Attachment
Cultural	Experience, norms, and ideologies	Uncertainty avoidance	Individualism and collectivism

Note. The predicted sources of influence presented in this table, and in the article more generally, are meant to be illustrative rather than exhaustive.

Cognitive determinants



Motivational determinants: Effectance motivation

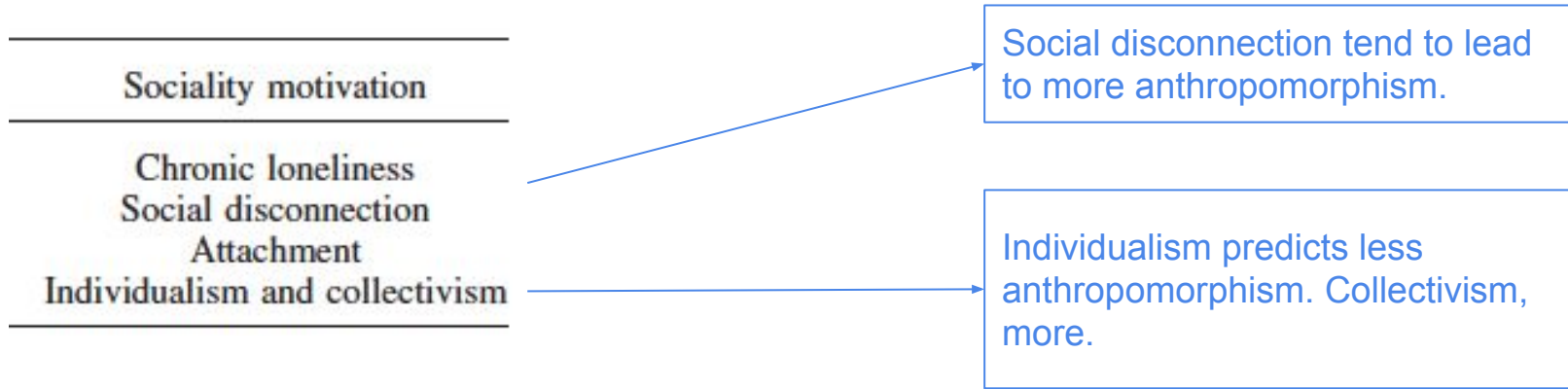
Effectance motivation

Need for closure, desire for control
Anticipated interaction, apparent predictability
Attaining competence
Uncertainty avoidance

Less control or closure, more anthropomorphization.

If one anticipates to interact in the long-term (more than one time) with something, you tend to anthropomorphize it more. Malfunctions tend to lead to more anthropomorphism.

Motivational determinants: Social motivation



What could be other determinants?

What does anthropomorphism imply behaviorally or emotionally?

In HRI, when is anthropomorphism:

Beneficial?	Detrimental?
Collaboration, understanding	When predictability is desired, anthropomorphism is less desired (e.g., assembly lines).
Autism, ToM	Industrial robots, situations where responsibility is attributed to the robot (external locus of control), instead of the workers responsibility.
Safety (less threat)	
Increased communication (readable social cues, e.g., Baxter)	

Group exercise

Consider the following three individuals:

- 1) An elderly living alone
- 2) A tech savvy young adult
- 3) A child with autism

What can design guidelines be for a robot interacting with these individuals based on the 3-factor theory presented in this paper?

Group exercise: Answers

Elderly person

Acquisition of alternative theories is low,
Anticipated interaction is high, should be leveraged with care (appearance, robot at rest behavior)
Social factors are pronounced (design the robot as a social companion with careful considerations on not aiming at replacing human relationships)

Tech savvy

High cognitive function.
The robot should be half-stupid (needs some improvement)

Child with autism

Lack of theory of mind
Gaze aversion scenario

Dehumanization?
Zoomorphism?



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Meeting #6 (29 March 2019)