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Investigating Human Values with Brain Imaging

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VALUES

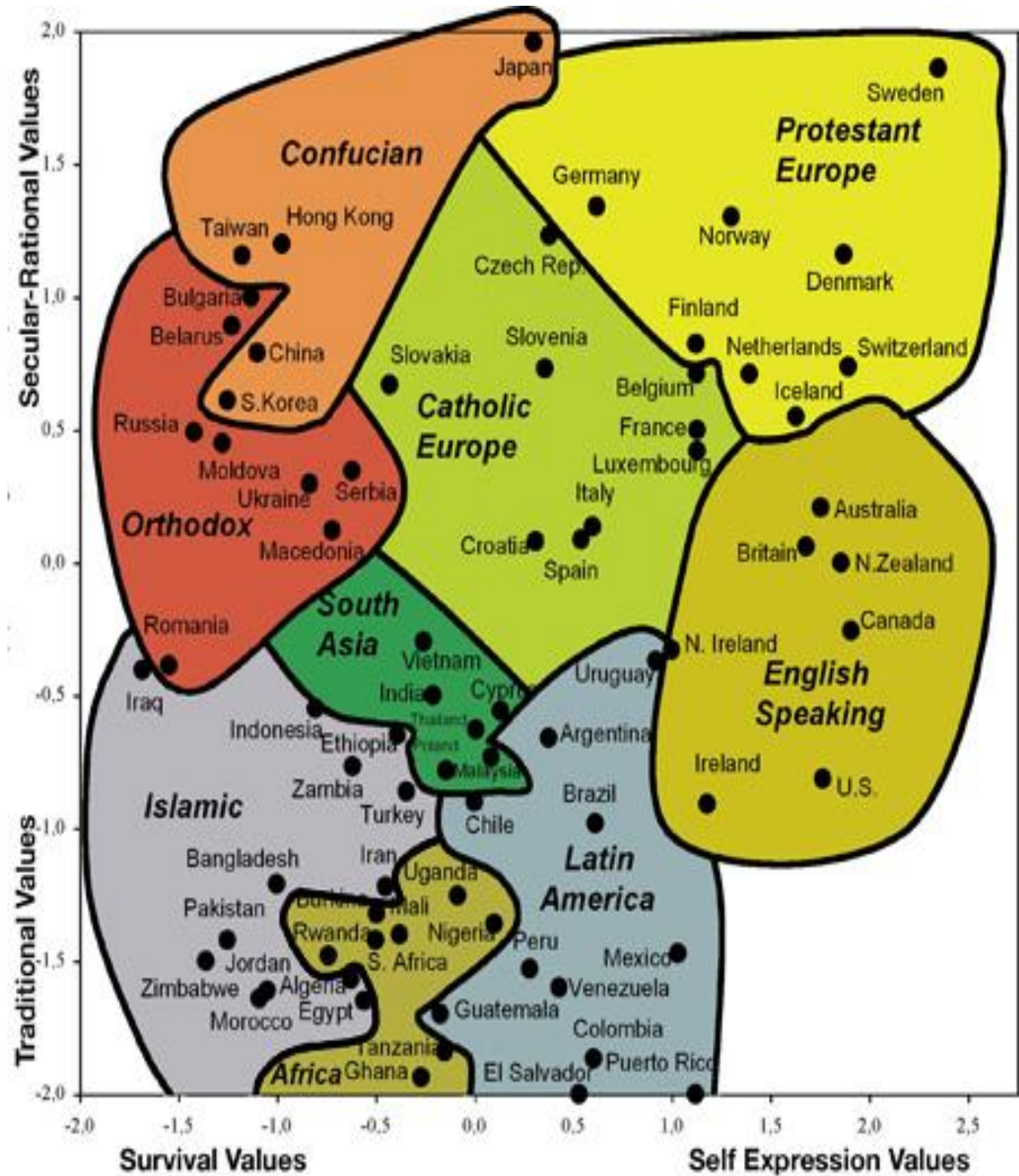
- abstract, life-guiding principles that exist across cultures ¹
- core to the 'self'²
- motivate action ³
- positioned by socio-structural and cultural worldviews⁴

¹ Rokeach 1973; Schwartz 1992

² Gecas 2000; Hitlin 2003

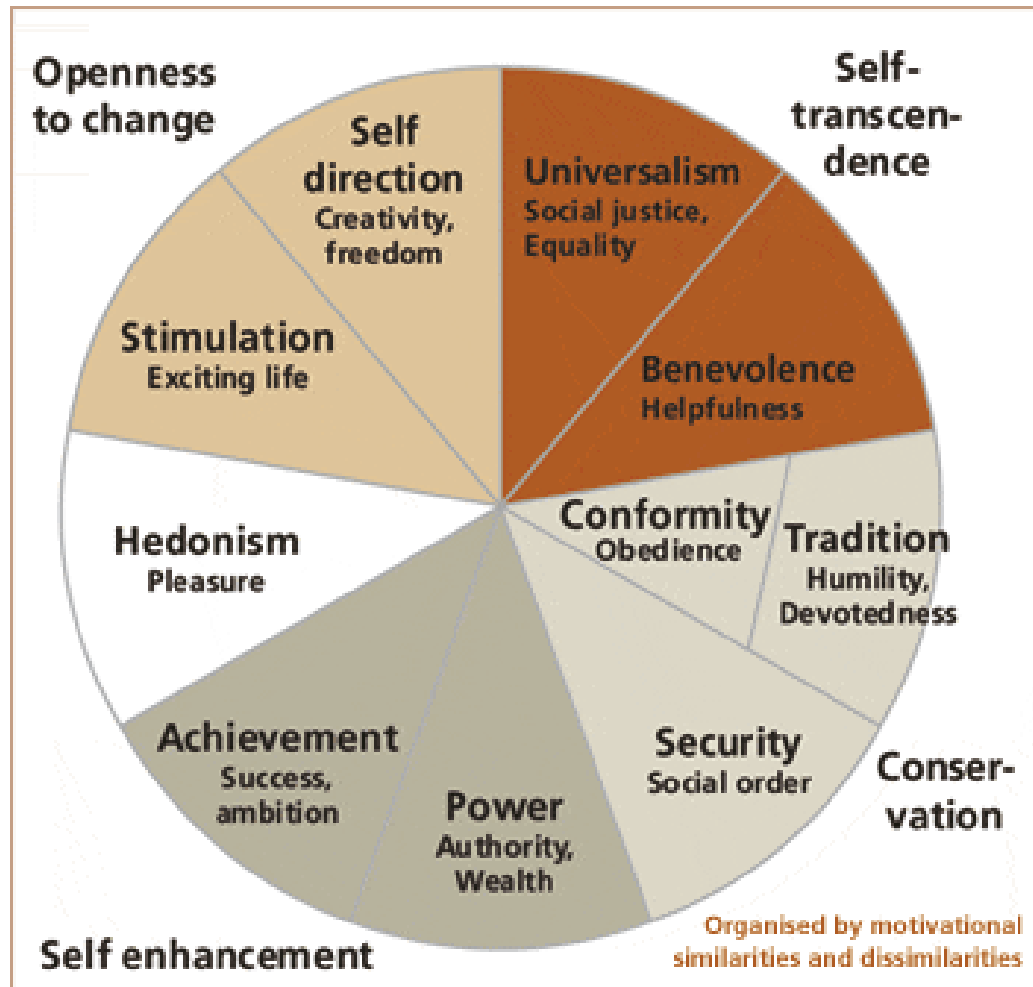
³ Feather 1992; 1995

⁴ Longest, Hitlin and Vaisey 2013; Kohn 1969; Kohn and Schooler 1983, Inglehart and Baker 2000; Kluckhohn and Strodtbeck 1961; Ortuno 1991



Inglehart and Baker (2000)

Schwartz Values Circumplex



Power: social status, dominance over people and resources

Achievement: personal success according to social standards

Hedonism: pleasure or sensuous gratification

Stimulation: excitement, challenge, and novelty

Self-Direction: independence of thought and action

Universalism: understanding, tolerance, and concern for welfare of all others

Benevolence: preserving and enhancing welfare of those to whom one is close

Tradition: respect and commitment to cultural or religious cultures and ideas

Conformity: restraint of actions/impulses that may harm others or social Expectations

Security: safety and stability of society, relationships, and self

Agentic and Emancipative Values

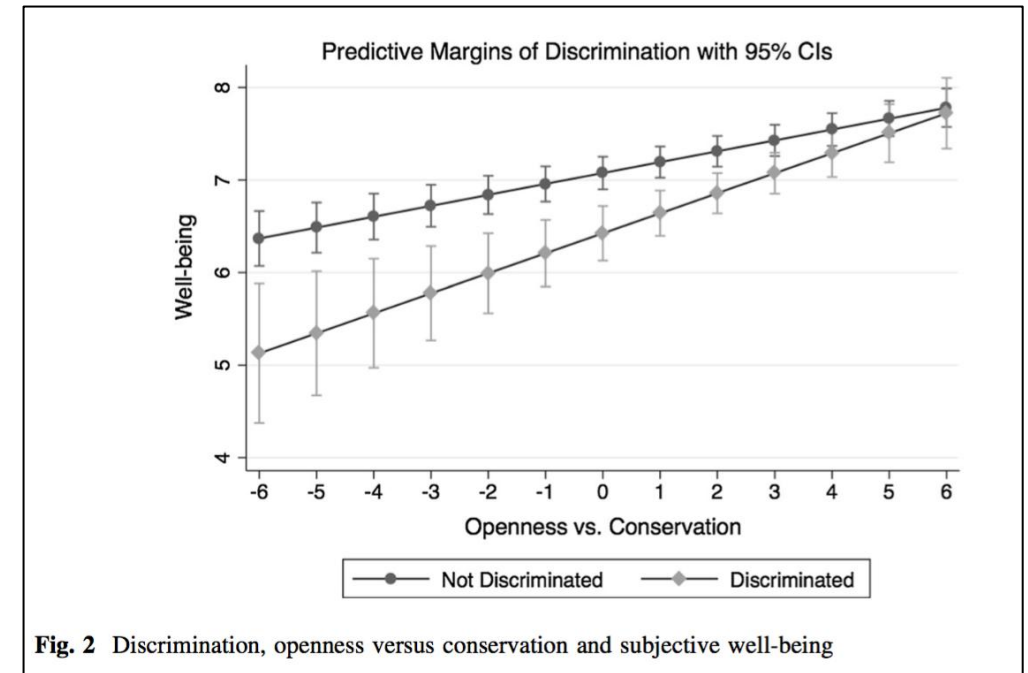
Agentic values: Socially patterned beliefs about individuals' ability to exert influence on situations and their lives¹

- Agentic inventiveness, Openness to change (new ideas, experiences)²
- Self-expression & emancipation (freedom of choice and equality of opportunities)³

¹Hitlin and Elder 2006; 2007; Hitlin and Long 2009.

²Bandura 2006; Schwartz, 1992; 1996.

³Inglehart et al. 2008; Welzel and Inglehart 2010; Welzel 2013.



Firat 2016. *Social Indicators Research*.

Research Focus

- How???

- Mental mechanisms

1. Implicit vs. explicit mechanisms

2. Emotions vs. cognition

- Distinct mental mechanisms for different value types? Agentic vs. non-agentic

1. Implicit vs. Explicit

Conscious

Explicit

Often

slow/Deliberate

vs.

Non-conscious

Implicit

Automatic/Fast

Neural correlates of the “moral mind”: gut reactions or intuitions.
(Damasio 1994; Greene 2007; Haidt 2001; 2007; Moll 2002)

1. Implicit vs. Explicit: Research Questions

Are implicit and explicit mechanisms equally important for value processing and enactment?

Can people hold implicitly and explicitly different value orientations?

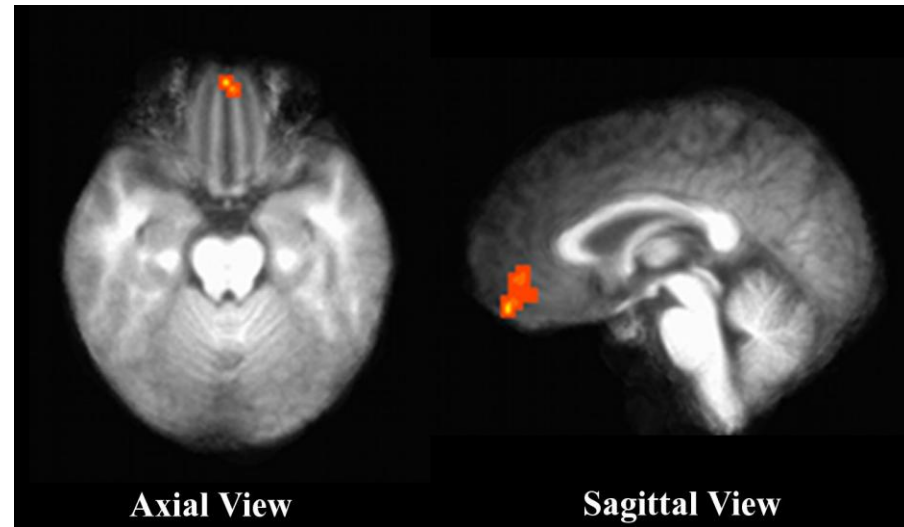
2. Emotions vs. Cognition

- “Hot” vs. “Cold” cognition
- Emotion-laden intuitions as the primary determinants of moral judgments: “push” moral conclusions.¹
- Can be overridden with deliberate thinking.¹

Moral emotions like guilt, envy, pride, shame linked to social identity bias and out-group prejudices.²

¹ Damasio 1994, Greene 2007a, b, Haidt 2001, 2008, Hauser 2007, 2009, Moll et al. 2005, 2007.

² Opatow 1990, Leyens et al. 2002, 2003.



Firat et al. *Forthcoming*.
Social Cognitive and Affective Neuroscience.

2. Emotions vs. Cognition : Research Questions

- How do emotional vs. cognitive processing get involved in value processing, formation and enactment?
- Are emotive vs. cognitive processes related to different value orientations?
- Are the values that are phylogenetically older (evolved earlier in history like those related to in-group identities and social hierarchies) associated with emotions while those that are relatively newer (i.e., agentic values) related to cognition?



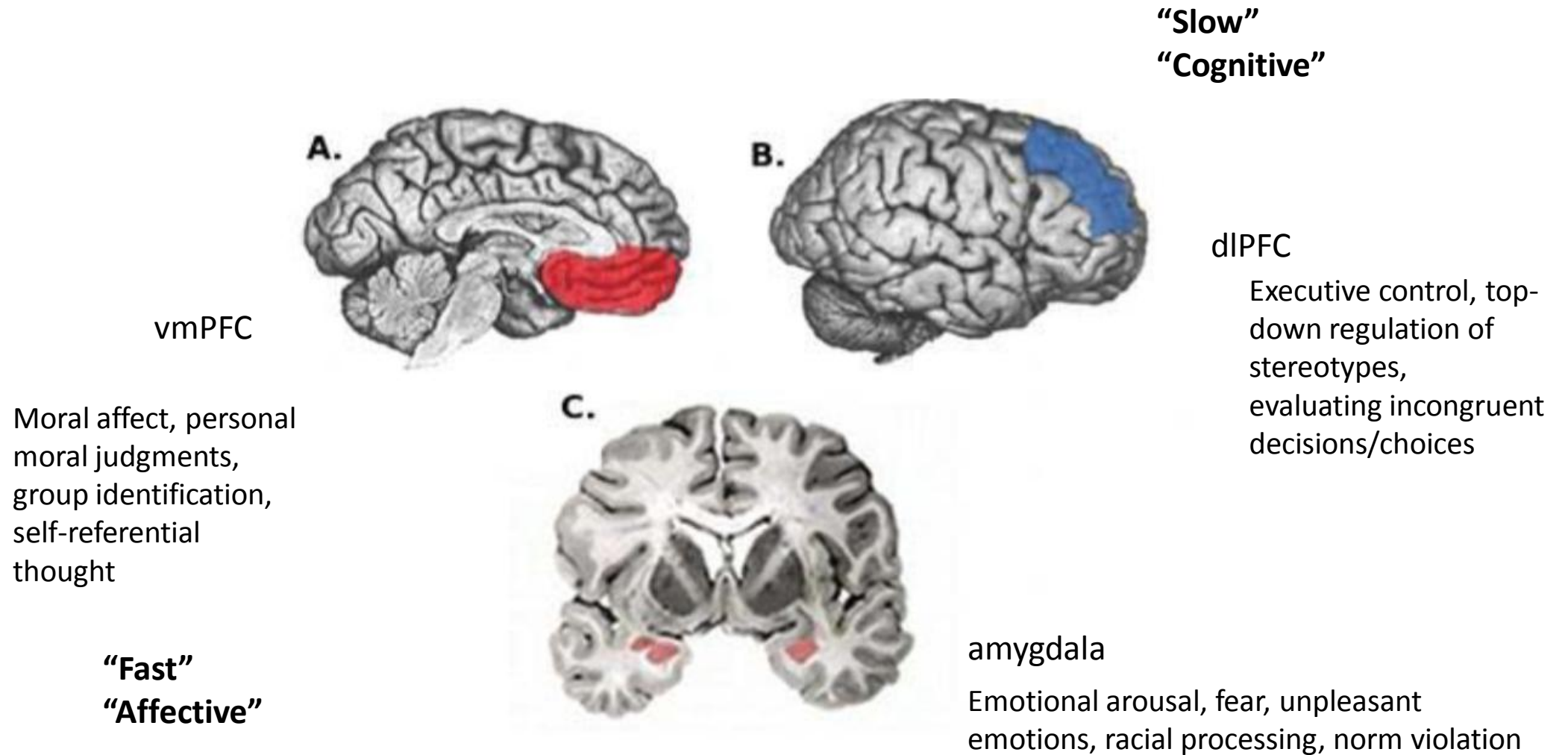
Research Questions

1. Are implicit and explicit mechanisms equally important for value processing and enactment?
2. Can people hold implicitly and explicitly different value orientations?
3. How do emotional vs. cognitive processing get involved in value processing, formation and enactment?
4. Are emotive vs. cognitive processes related to different value orientations?
5. Are the values that are phylogenetically older (evolved earlier in history like those related to in-group identities and social hierarchies) associated with emotions while those that are relatively newer (i.e., agentic values) related to cognition?

Functional Magnetic Resonance Imaging



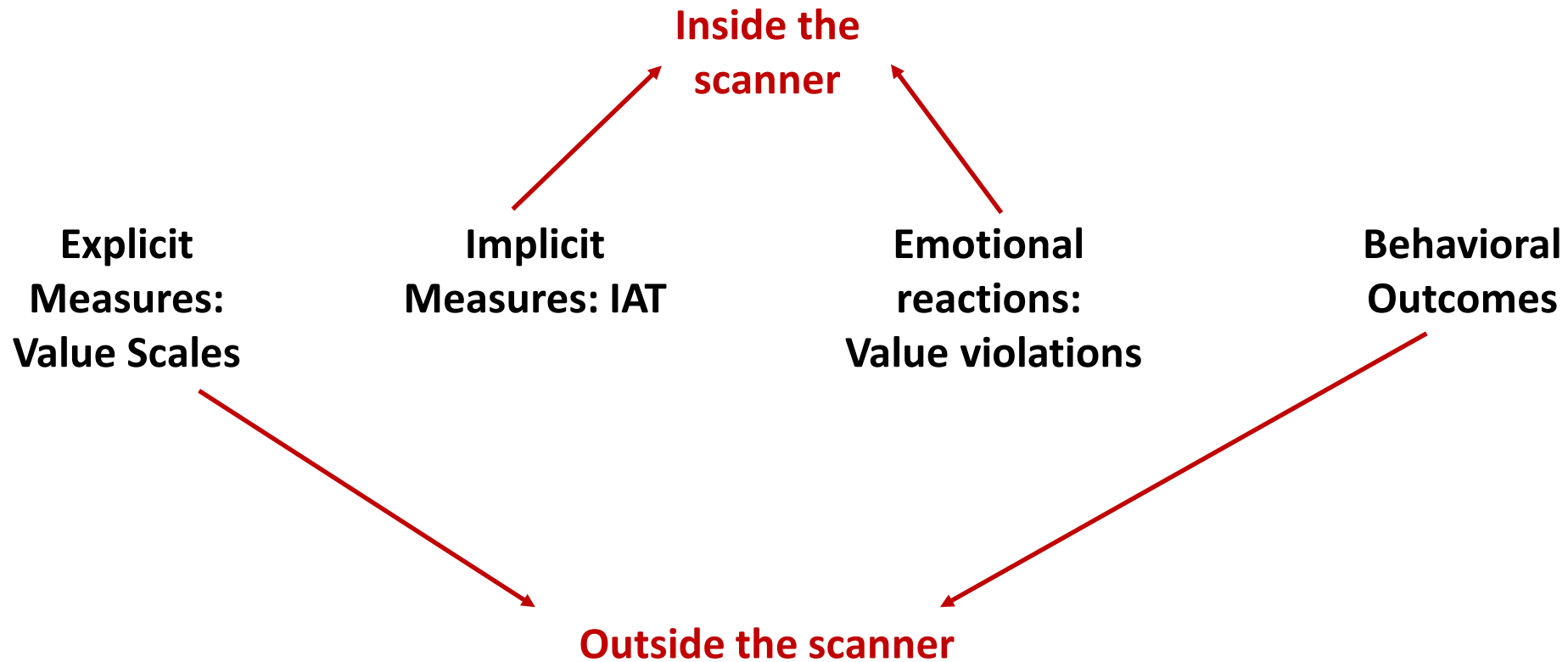
Potential key brain regions for processing values



Measurement Strategies

- Presenting statements on the screen and collecting agreement or feeling ratings
- IAT
- Willingness to take money to change one's value (measured with statements)
- Visual stimuli (e.g., pics depicting scenes)
- Econ games (e.g., ultimatum game, dictator game)
- Charitable donations

How to measure?

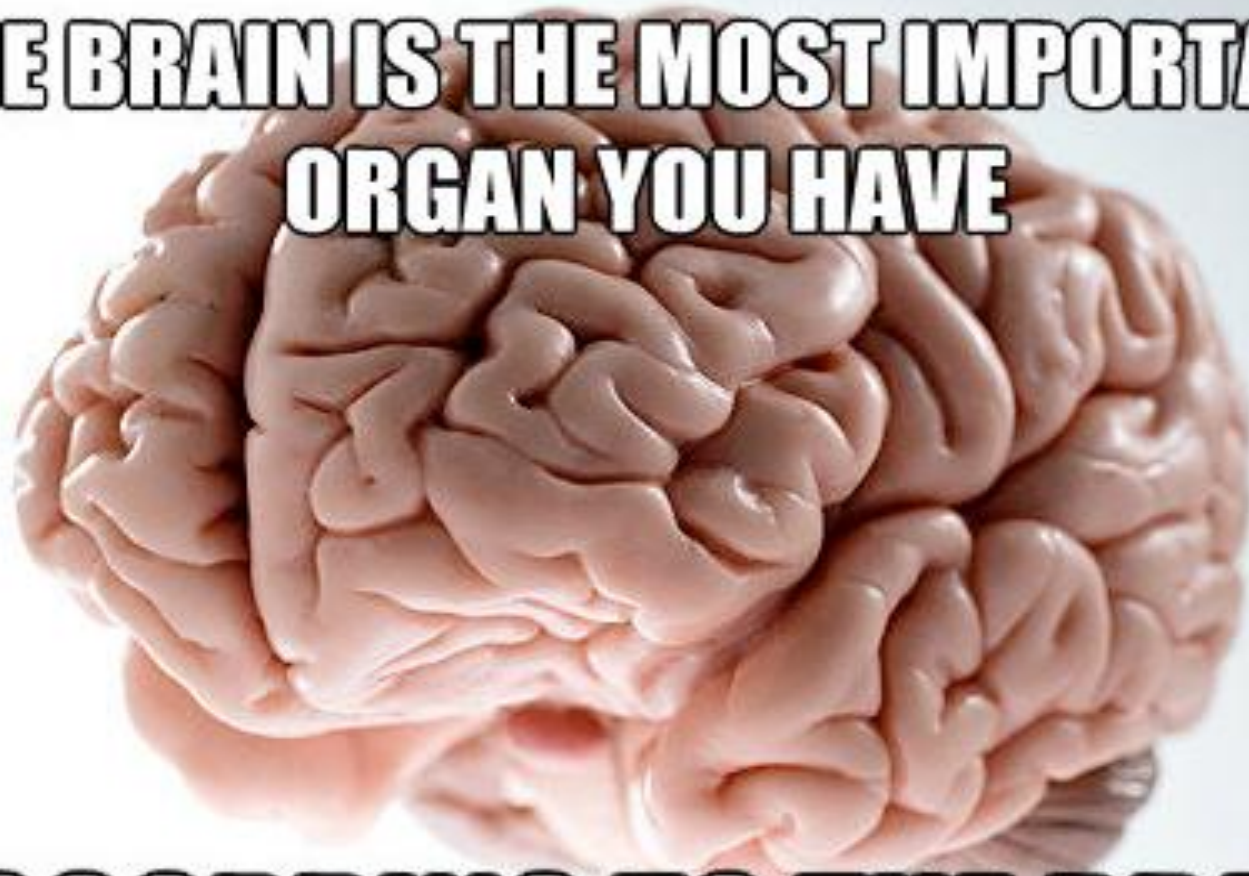


Conclusion



THANK YOU!

**THE BRAIN IS THE MOST IMPORTANT
ORGAN YOU HAVE**



ACCORDING TO THE BRAIN

quickmeme.com

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Potential brain networks involved in social values

- Rewards system: fronto-mesolimbic systems
- Self-referential system: MPFC, TPJ
- Mental flexibility- self control: (D/V)LPFC

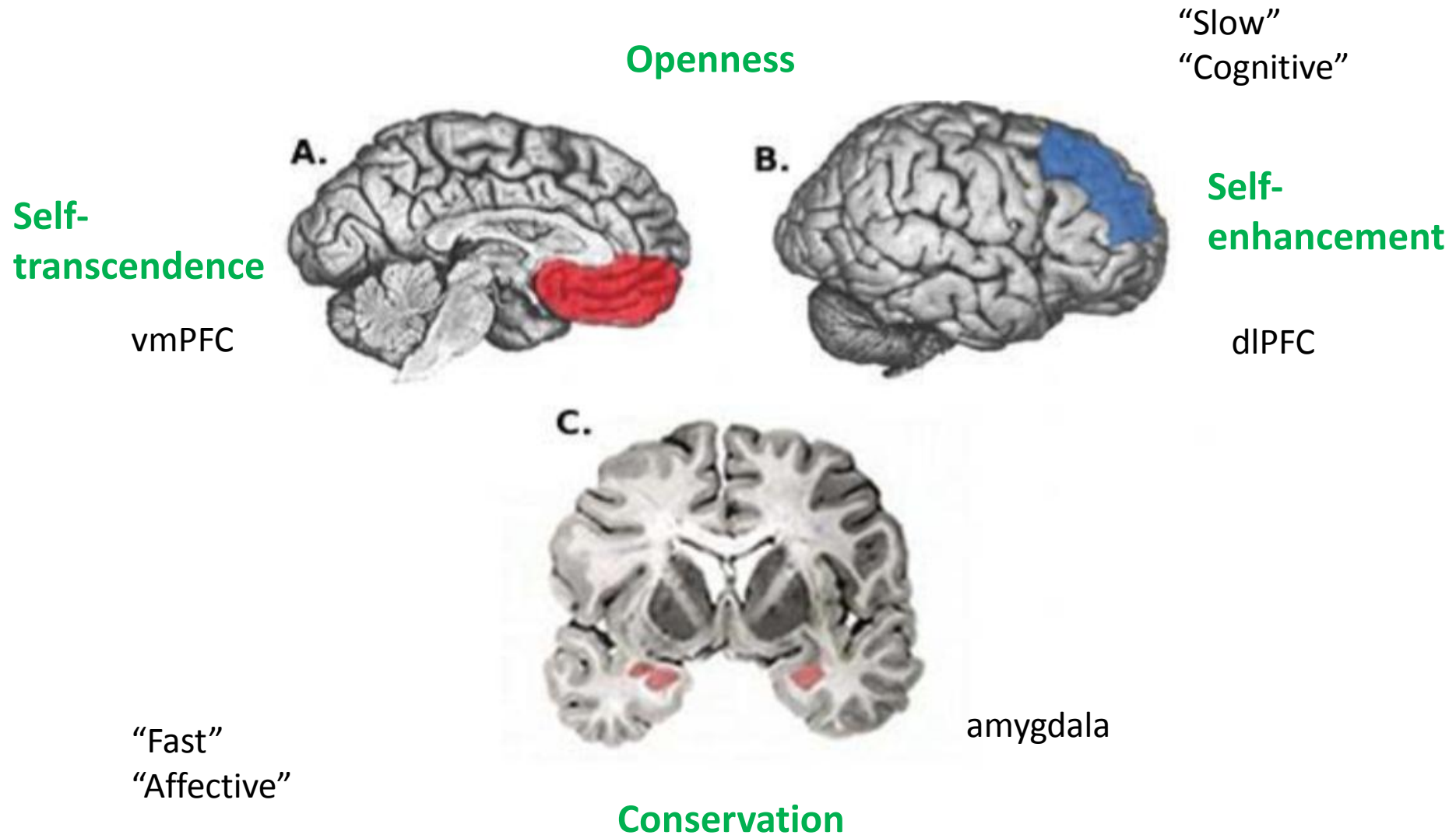
Domain specific research

- Altruism (allocating money in dictator game, TPJ) (Morishima et al. 2012)
- Prosocial behavior (allocating points, MPFC) (Sul et al. 2015)
- Charitable donations (reward system, Ventral Tegmental Area and striatum) (Moll et al. 2006)
- Social conformity (changing ratings after exposure to others', nucleus accumbens, OFC, MPFC, VLPFC) (Locke et al. 2016; Zaki et al. 2011)
- Social Dominance Orientation (hierarchy vs. egalitarianism, anterior insula and ACC) (Chiao et al. 2009)
- Democrats (left insula) vs. Republicans (right amygdala) (risk taking behavior, choosing monetary options) (Schreiber et al. 2013)

fMRI Studies of Social Values

- Core values (MPFC) vs Economic Values (mOFC, DLPFC) (Brosch et al. 2012)
- Self (MPFC) vs. other (agency) (LPFC) / accordant vs counter to values (fronto-mesolimbic regions) (Zahn et al. 2009)
- Utilitarian (OFC) vs. Deontological (sacred) (left temporoparietal junction and ventrolateral prefrontal cortex) values (Berns et al. 2012)

Potential key brain regions for values



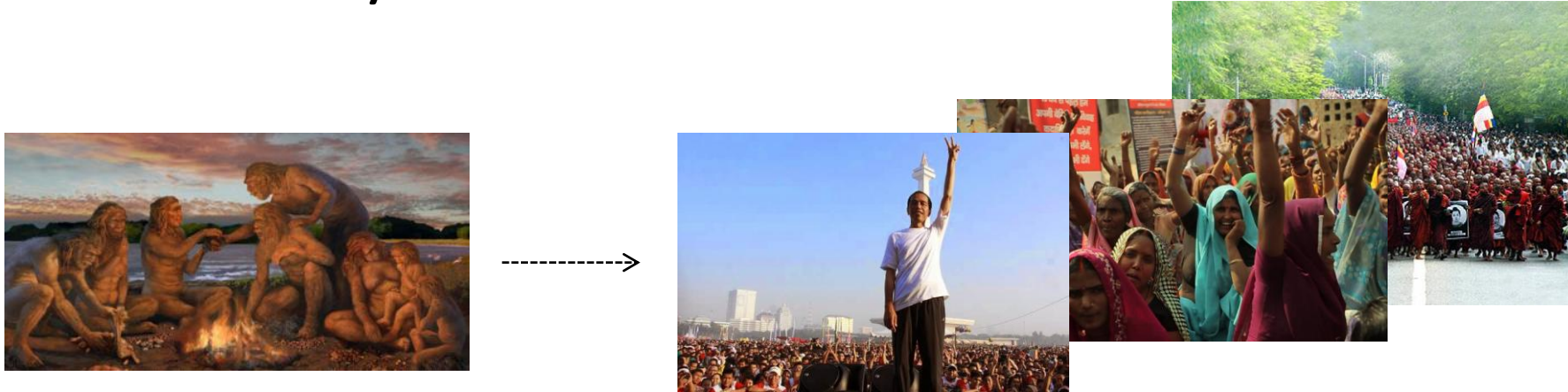
Adapted from Barret et al. 2007

Interspecific Altruism in Humpback Whales



Pitman et al. 2016. "Humpback whales interfering when mammal-eating killer whales attack other species: Mobbing behavior and interspecific altruism?." *Marine Mammal Science*.

Morality – Cultural Evolution



Environmental complexities/pressures

Functionally adaptive capacities for morality:

- use/understand symbols
- abstract thinking
- emotions
- social cognitive functioning

Human development, adaptation and change

