

# Spirituality Prayer Predictive minds

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RCC

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# Entropy





# Life





# Humans



# Short-term





# Long-term





# Change the environment





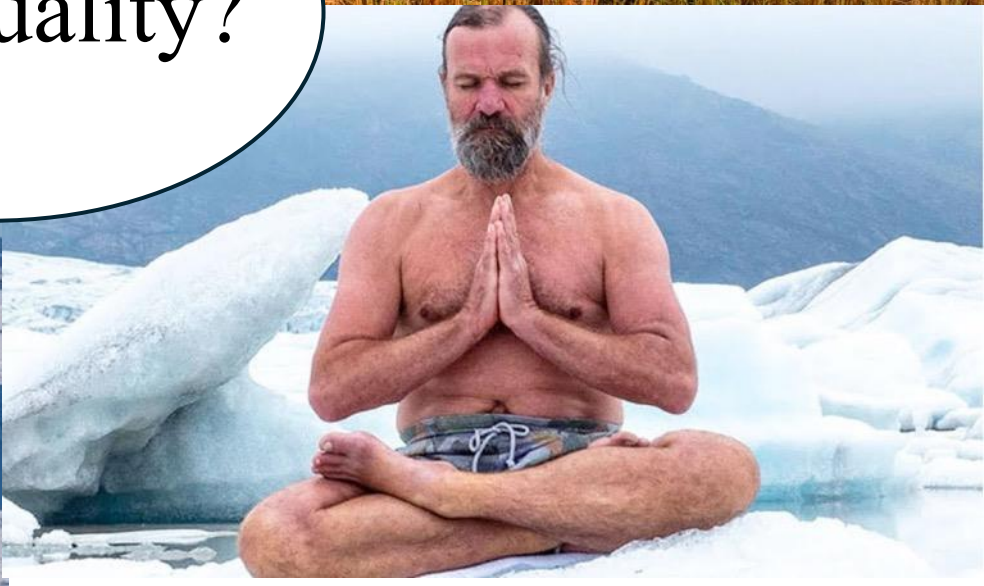
# Change yourself







Spirituality?





Situational appraisal vs. global beliefs

Primary vs. secondary control strategies

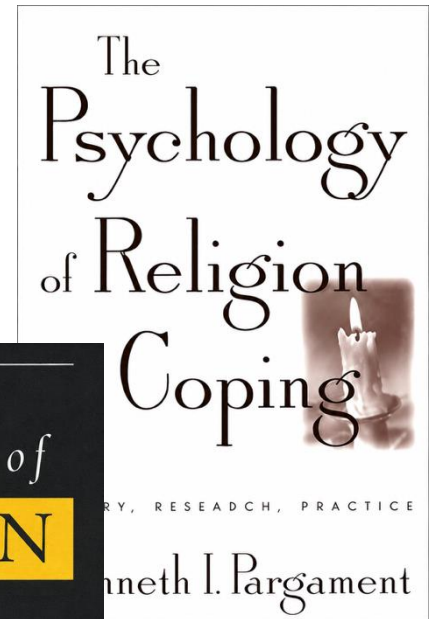
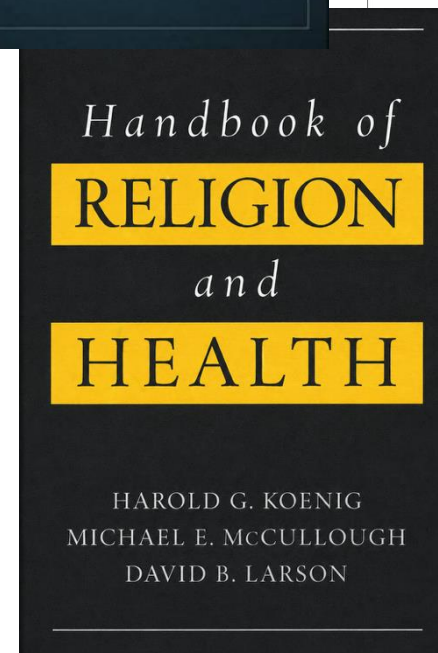
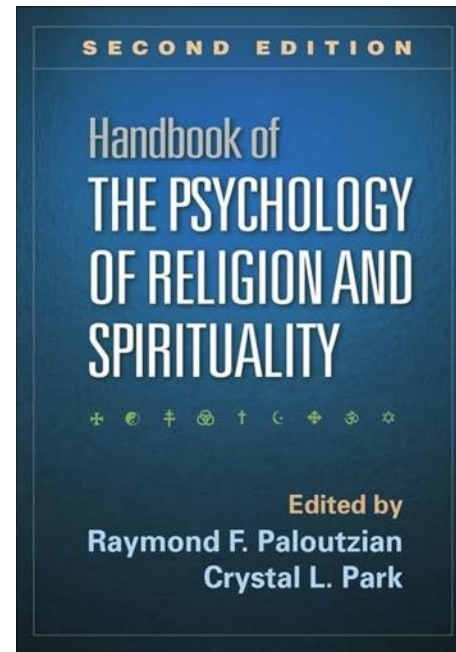
Attachment styles, personality traits etc.

Constructs, scales, and correlations.

Holistic integration!

So, why entropy?

Psychophysical holism?





# The human brain

Keeps the organism within viable states.

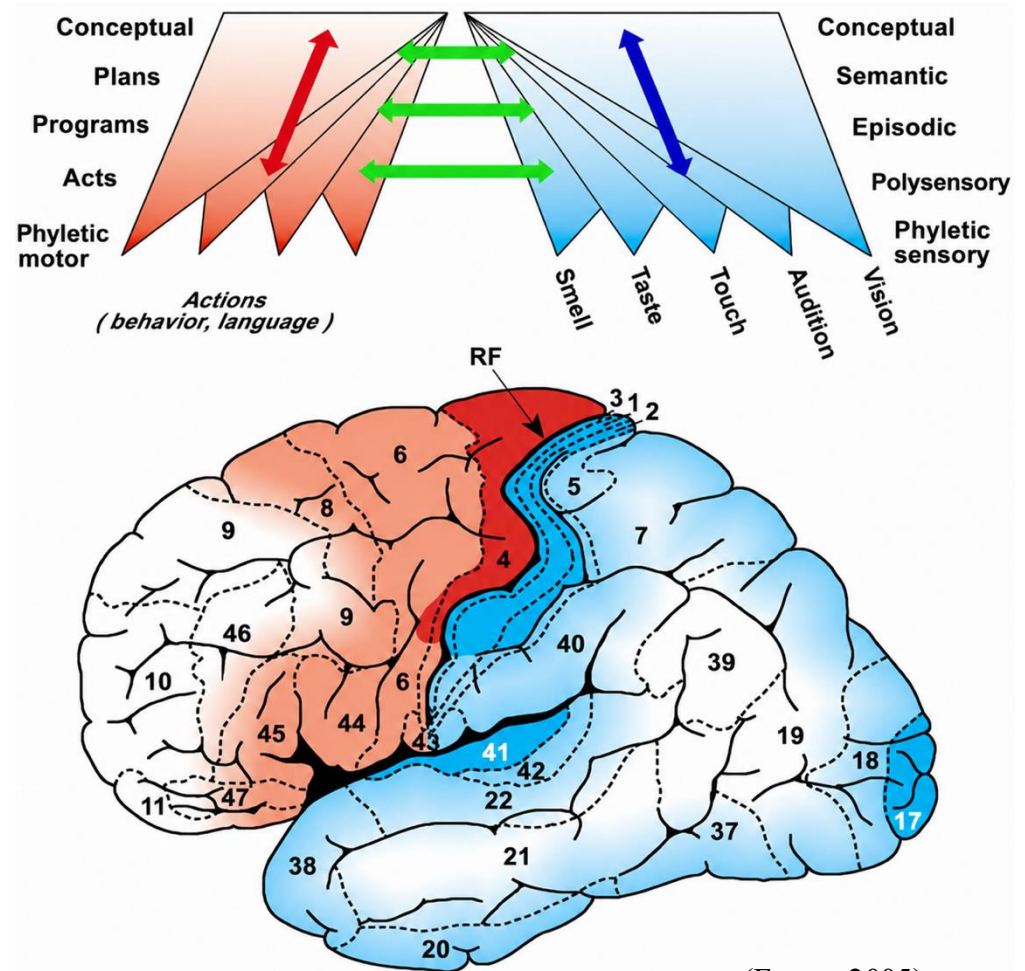
Through perception and action.

Short-term, long-term behavior.

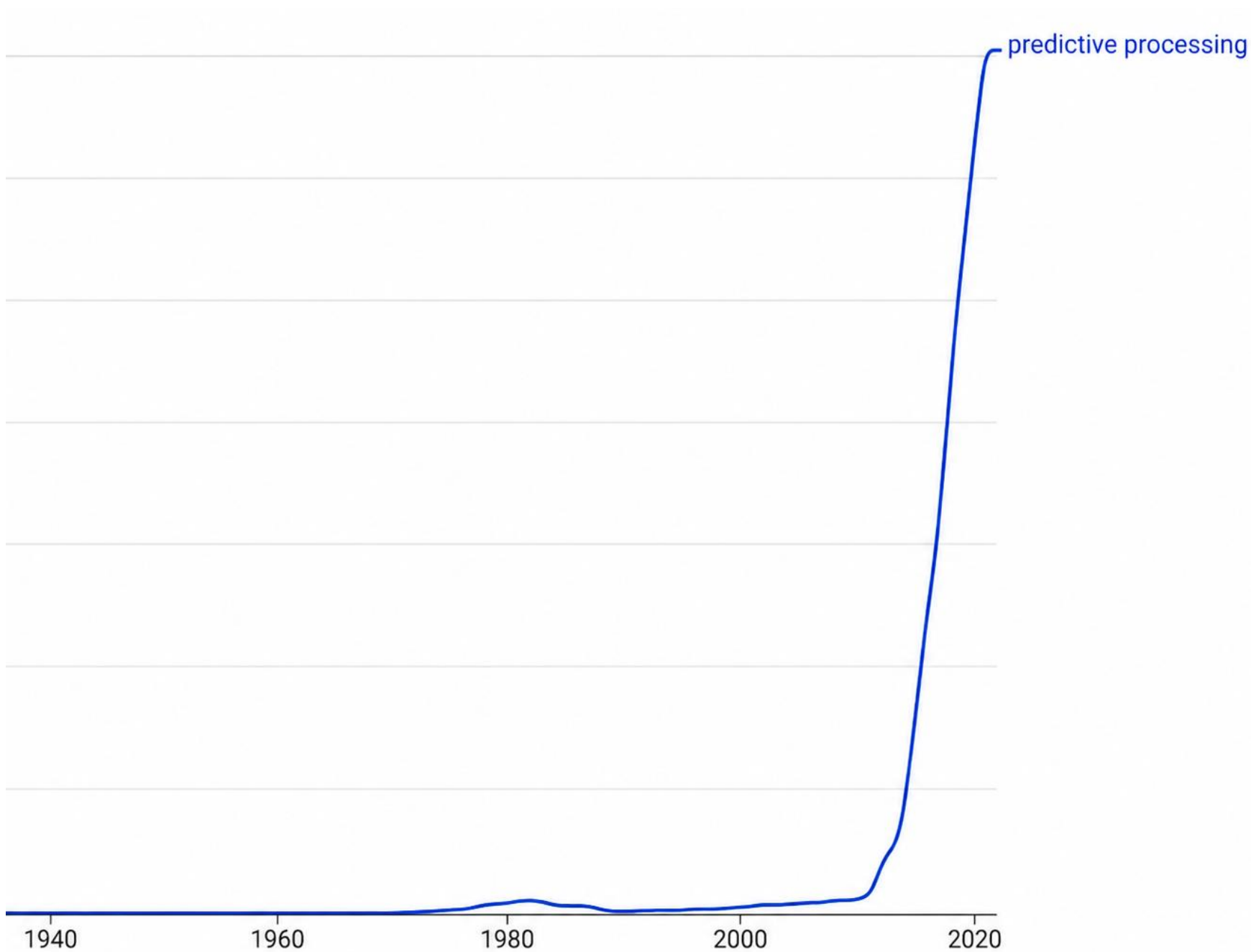
Internal, external adjustment.

Entropy threatens, if the brain fails to update its internal models to changing environments.

How does that work?



(Fuster, 2005)





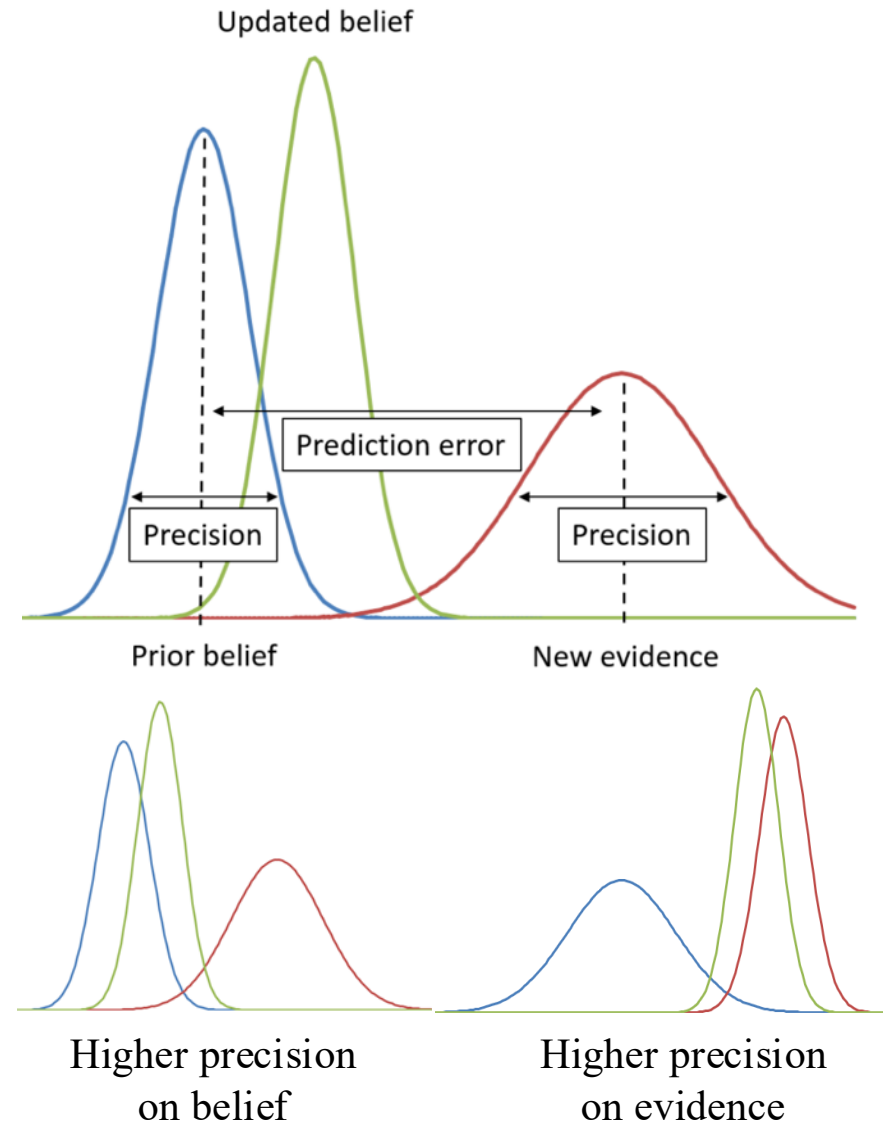
# Predictive processing

To remain within viable states, the brain continuously predicts the causes of sensory inputs.

Mismatches between predicted and actual input generate prediction errors.

Prediction errors are minimized by updating its predictive models.

This process approximates Bayesian updating.



# Predictive processing

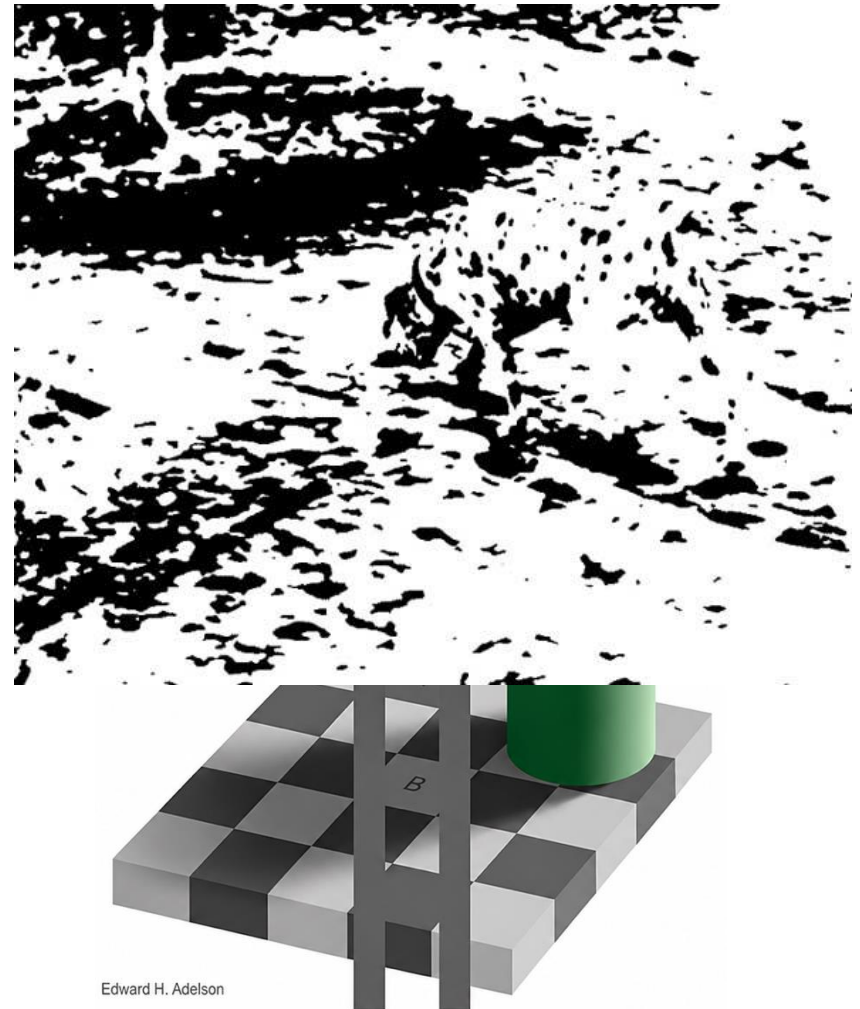
Experience reflects the search for the model that causes the least prediction error.

Sensory input usually dominates...

..but not always: strong priors, noise, ambiguity, and sensory deprivation.

Top-down beliefs and bottom-up input.

Religious experiences?





# Expectancy effects and sensory reliability

RELIGION, BRAIN & BEHAVIOR  
2019, VOL. 9, NO. 1, 52–64  
<https://doi.org/10.1080/2153599X.2017.1378709>

 **Routledge**  
Taylor & Francis Group



## Agency detection in predictive minds: a virtual reality study

Marc Andersen<sup>a,b,c</sup>, Thies Pfeiffer<sup>d,e</sup>, Sebastian Müller<sup>d</sup>, and Uffe Schjoedt<sup>a,b,c</sup>



# Sensory deprivation and suggestion



BRILL

METHOD AND THEORY IN THE STUDY  
OF RELIGION (2014) 1-29

METHOD  
& THEORY in the  
STUDY OF  
RELIGION

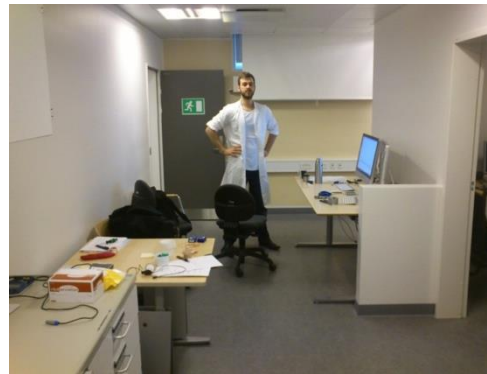
[brill.com/mtsr](http://brill.com/mtsr)

## Mystical Experience in the Lab

*M. Andersen, U. Schjoedt, K.L. Nielbo, and J. Sørensen*

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# Charismatic authority and source credibility

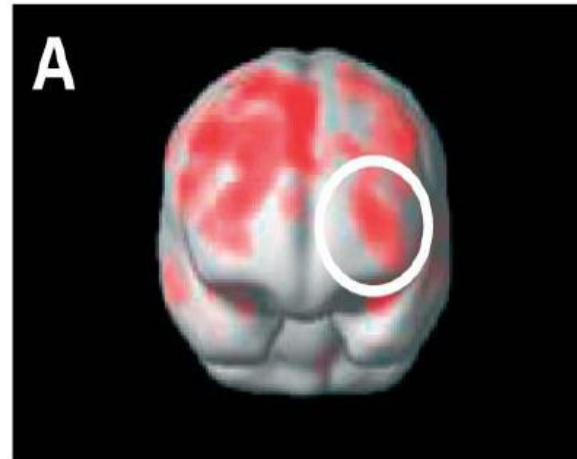
*Religion, Brain & Behavior*, 2013

Vol. 3, No. 1, 39–86, <http://dx.doi.org/10.1080/2153599X.2012.736714>

 Routledge  
Taylor & Francis Group

## **The resource model and the principle of predictive coding: a framework for analyzing proximate effects of ritual**

Uffe Schjoedt<sup>a\*</sup>, Jesper Sørensen<sup>a</sup>, Kristoffer L. Nielbo<sup>a</sup>, Dimitris Xygalatas<sup>a</sup>, Panagiotis Mitkidis<sup>a</sup> and Joseph Bulbulia<sup>b</sup>



# Psychedelics

1521-0081/71/3/316-344\$35.00

PHARMACOLOGICAL REVIEWS

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<https://doi.org/10.1124/pr.118.017160>

Pharmacol Rev 71:316-344, July 2019

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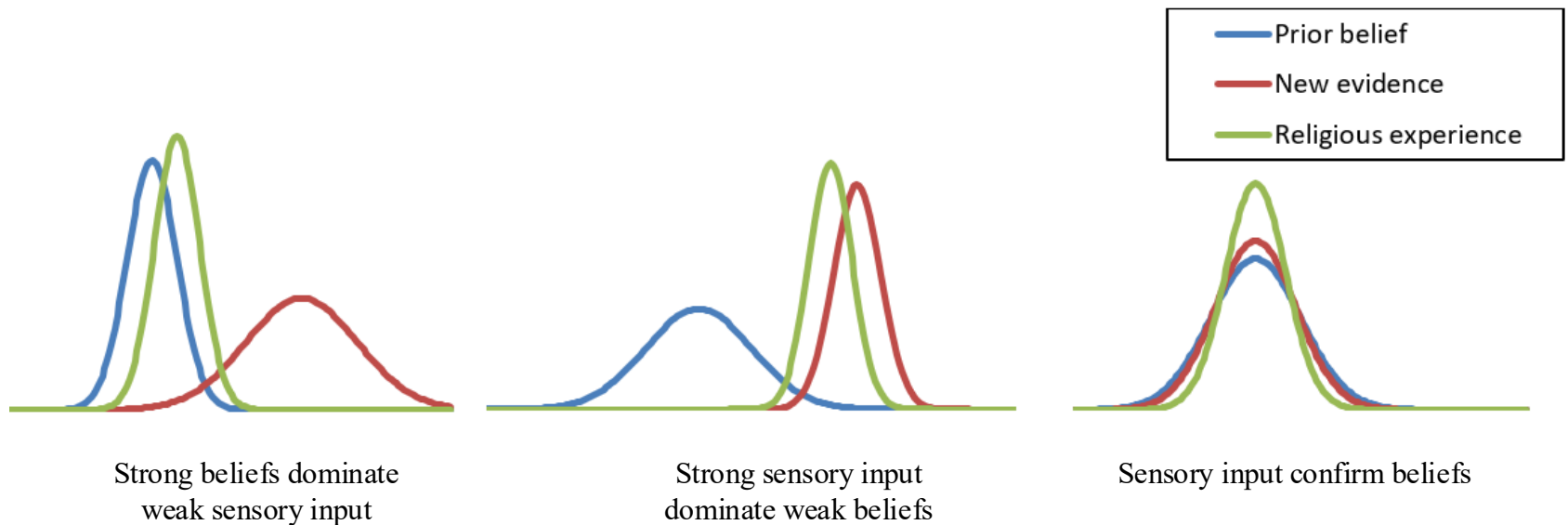
## **REBUS and the Anarchic Brain: Toward a Unified Model of the Brain Action of Psychedelics<sup>S</sup>**

R. L. Carhart-Harris and K. J. Friston





# Religious experience as Bayesian updates?



Intuitive!?

..maybe

..but are religious experiences really that simple?

# Experience in and out of timescales

Prediction errors reverberate through the entire predictive system.

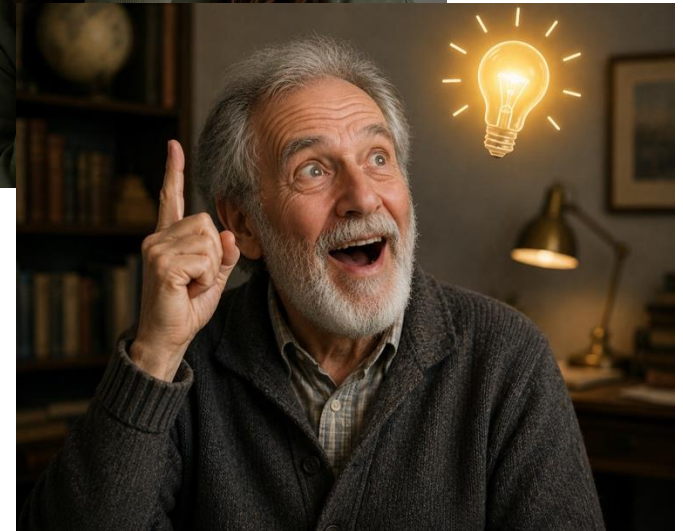
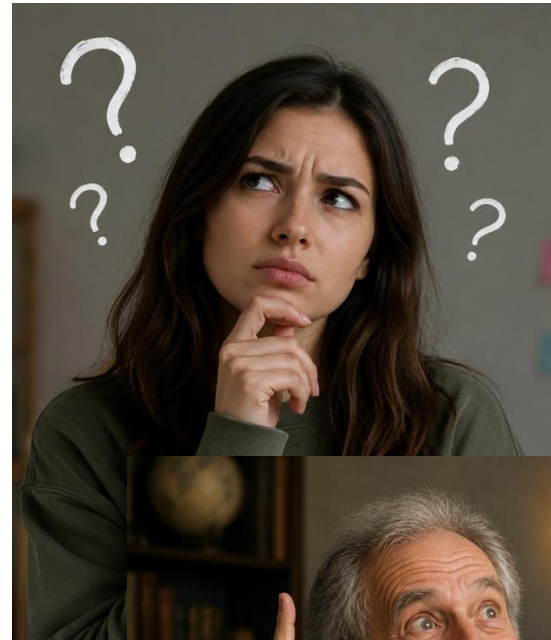
Experience is multilayered.

Vision, social interaction etc.

Identifying the best global model takes time.

Complex experiences extend beyond any particular event or situation.

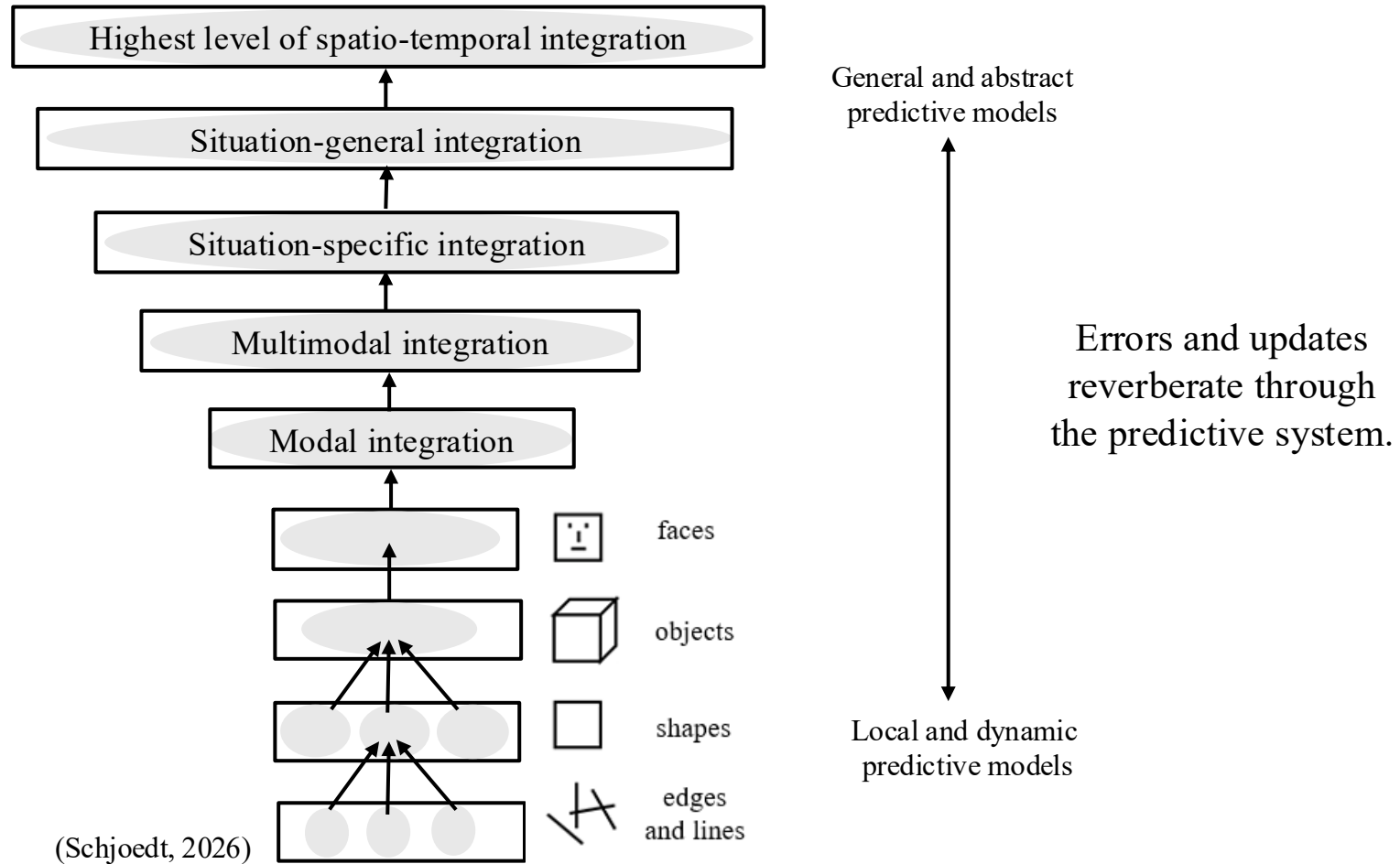
Religious experience?



"It was God!"



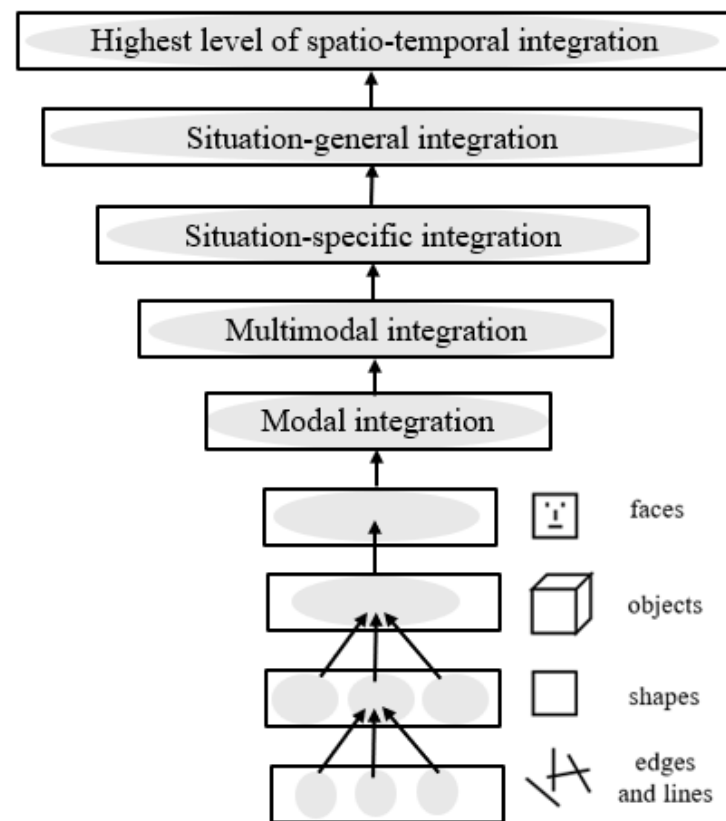
# Hierarchical predictive processing



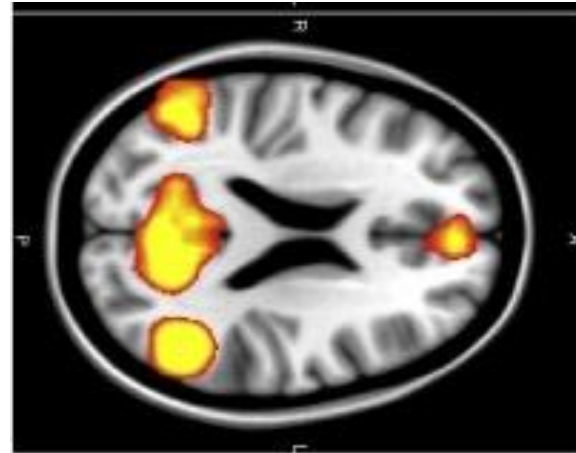
# Religion up and down the PP ladder

Important questions:

- How far up in the predictive system do religious beliefs operate?
- Do religious beliefs always migrate toward higher integration?
- When do religious beliefs backpropagate to lower PP levels (and how far down)?
- Why do reported supernatural encounters lead to lasting changes in some individuals, while others seem unaffected?



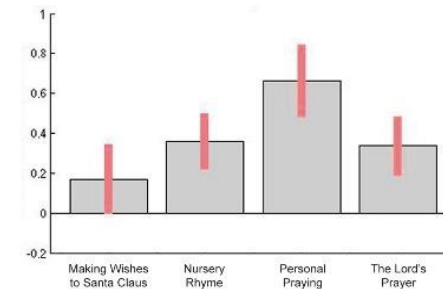
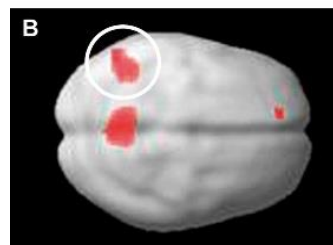
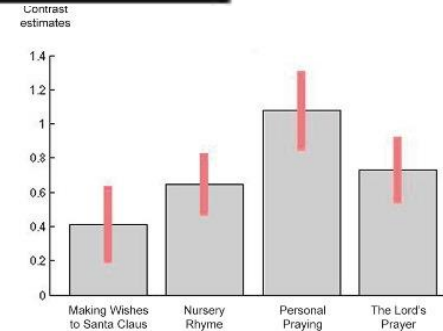
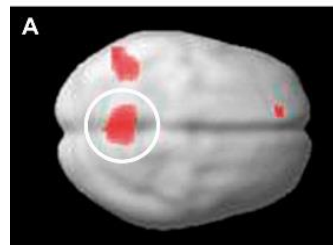
# How far up?



Top-down of the top-down?

Margulies et al., 2016.

The Default Mode Network.



Schjoedt et al. (2009)



# Do beliefs always migrate toward integration?

## **‘Spiritual’ vs. ‘Religious’**

|                                                                   |                                                                        |
|-------------------------------------------------------------------|------------------------------------------------------------------------|
| Modern spirituality                                               | Dogmatic religiosity                                                   |
| “Spiritual but not religious”                                     | “Religious but not spiritual”                                          |
| Meaning discourse                                                 | Truth discourse                                                        |
| Immediate and concrete problems<br>(e.g., health, social, career) | Long-term and abstract problems<br>(e.g., existential, life and death) |

# Hopeful conclusions

Predictive processing offers scholars of religion and spirituality..

..a model to explain how new experiences move through the mind.

..a vocabulary for describing how religious beliefs interact with changing environments.

..a framework for integrating models of religion and spirituality across fields and disciplines.

..the best shot at a holistic model of human activity?

..a beautiful story about life and entropy.

# Thanks for listening



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