

Functional Neurological Disorders: Mad, Bad or Sick?

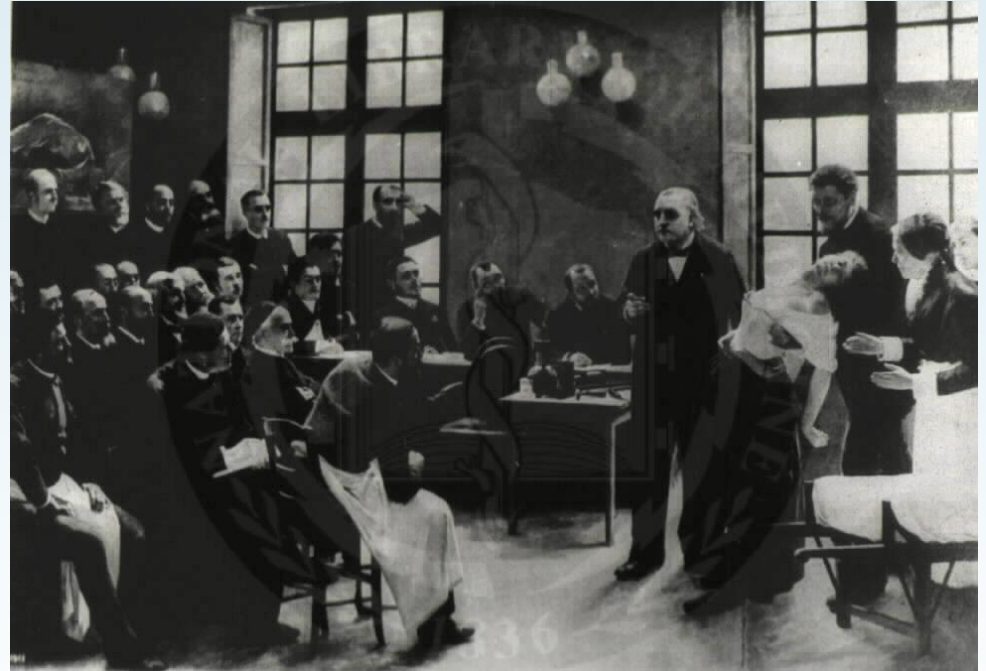
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Words in Search of a Disease

- Hysterical
- Functional
- Non-organic
- Supratentorial
- Psychogenic
- Psychosomatic
- Medically Unexplained



Hysteria – isn't that ancient history?

Diagnosis of “Hysteria”

ELIOT SLATER,† M.D., F.R.C.P., D.P.M.

29 May 1965

BRITISH
MEDICAL JOURNAL

myth it yet survives. But, like all unwarranted beliefs which still attract credence, it is dangerous. The diagnosis of “hysteria” is a disguise for ignorance and a fertile source of clinical error. It is in fact not only a delusion but also a snare.



"It is a mental thing. Absolutely. When you are under pressure, big pressure, sometimes the legs do not work normally."

Fabio Capello, 2010

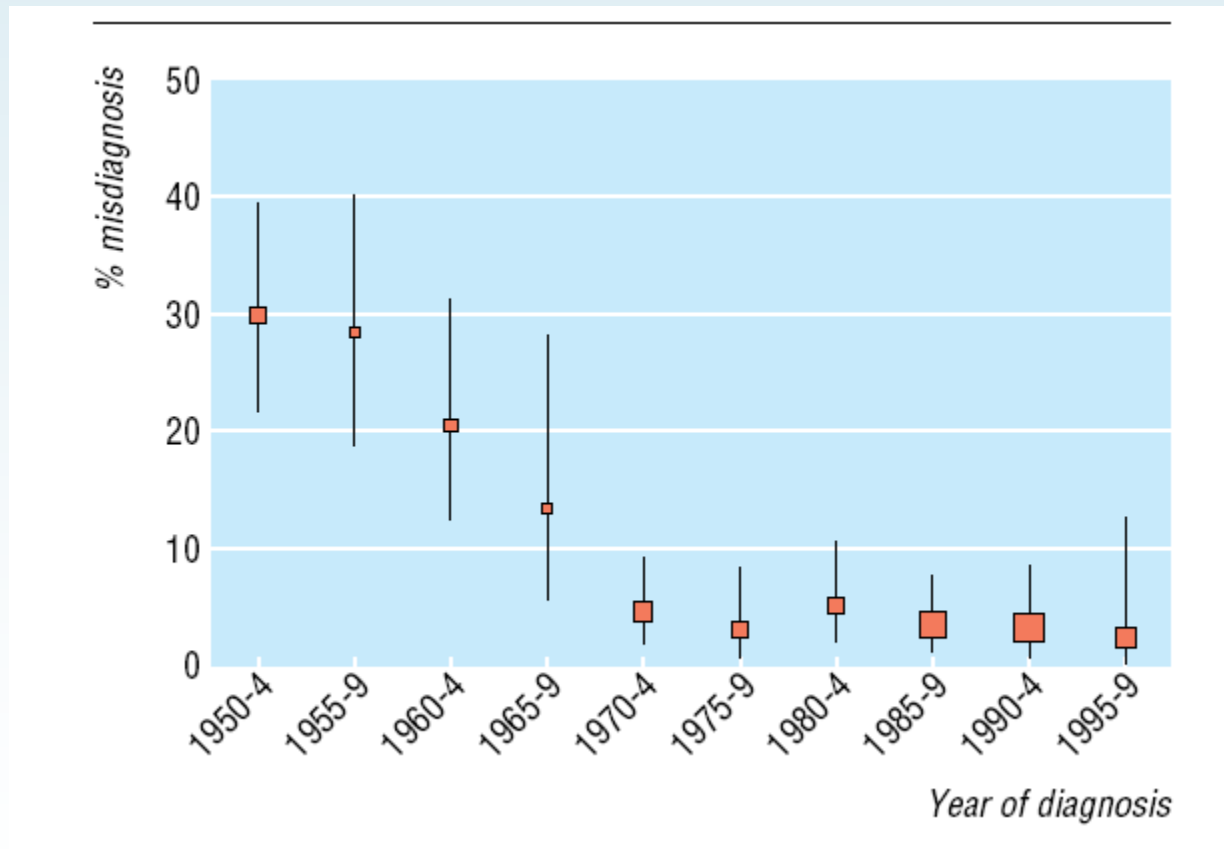
A hidden epidemic?

Table 2 The degree to which neurologists rated symptoms as explained by organic disease in 3781 new out-patients

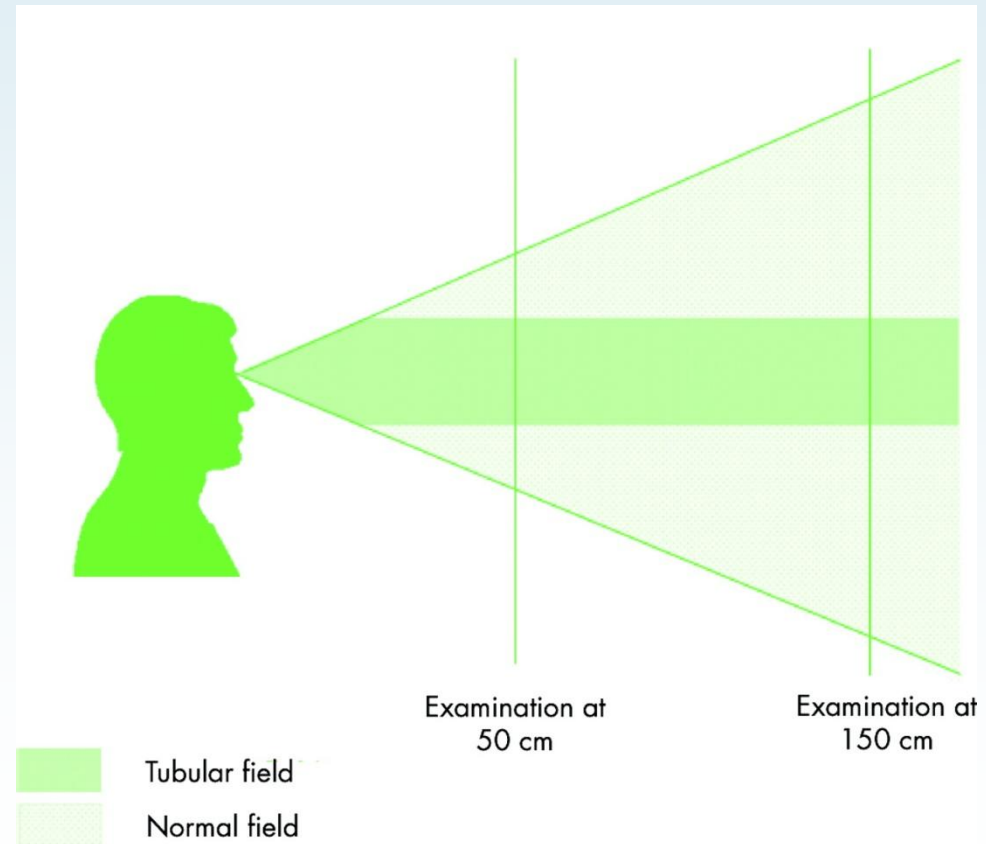
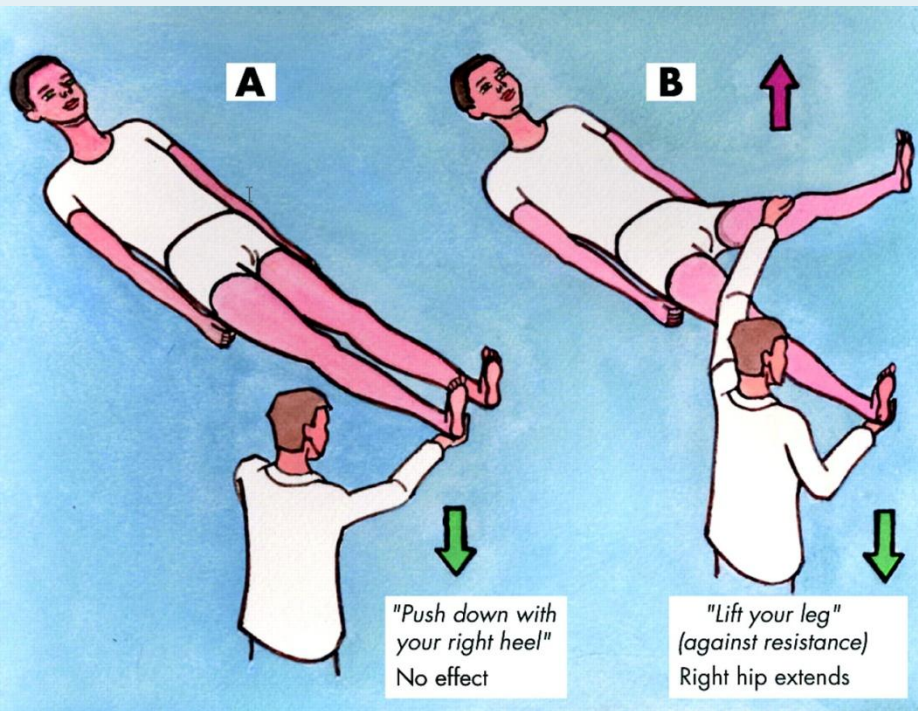
Symptom rating	n (%)	Age (mean, years)	Female (%)
Not at all explained by disease	446 (12)	41	68
Somewhat explained by disease	698 (18)	45	63
Largely explained by disease	940 (25)	47	58
Completely explained by disease	1697 (45)	48	51
Total	3781 (100)	46	57

Stone et al, Brain 2009

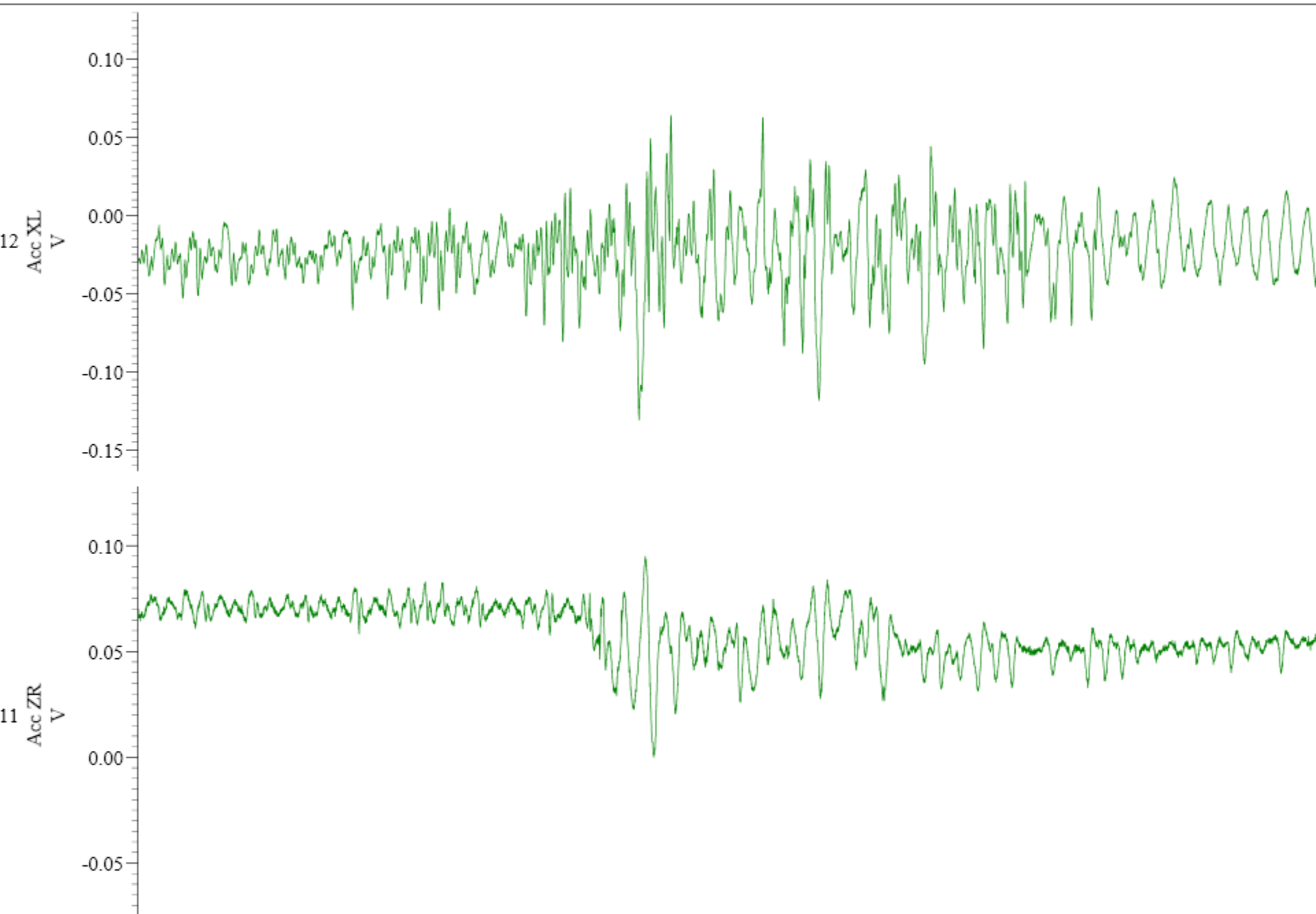
A stable diagnostic group

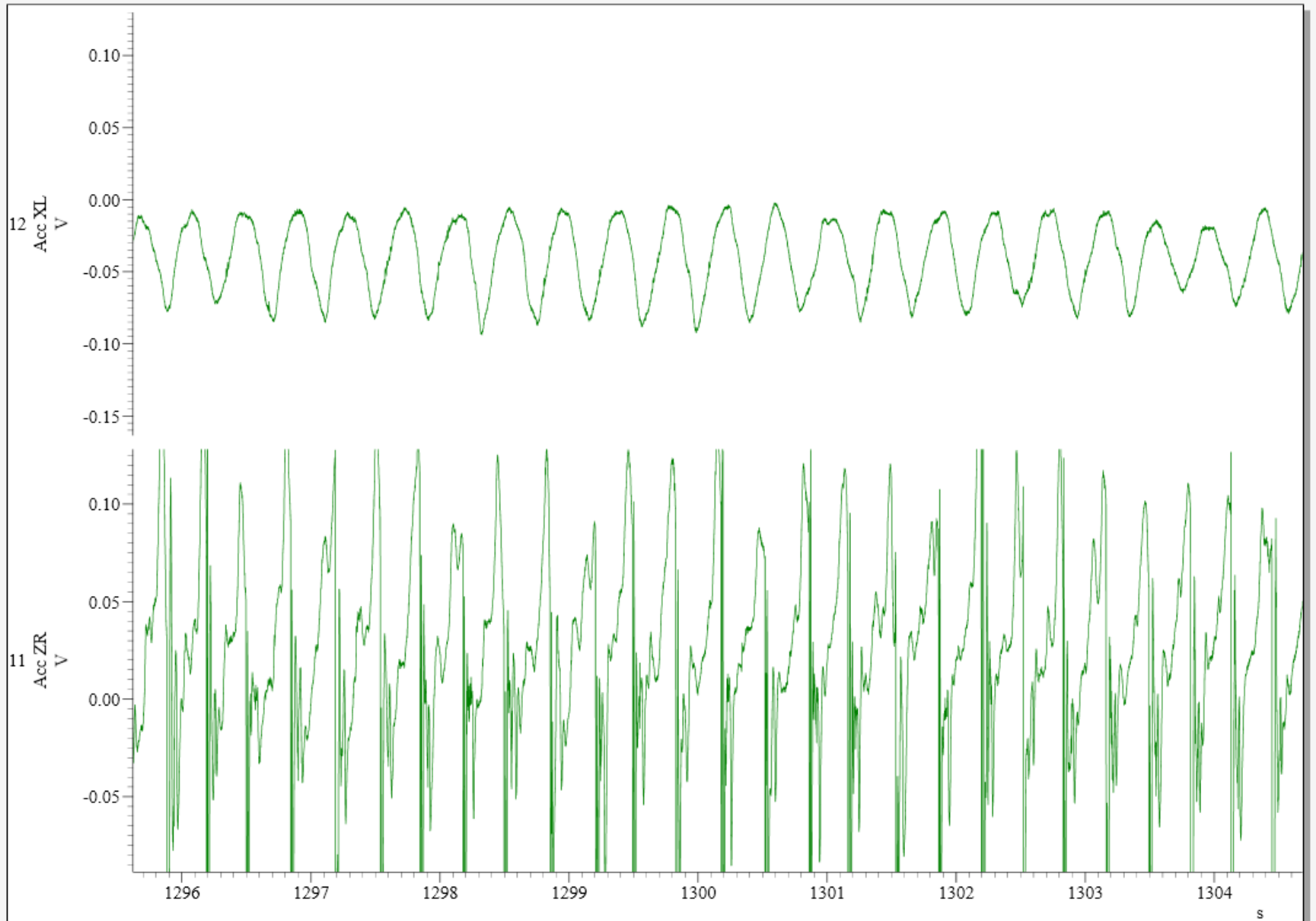


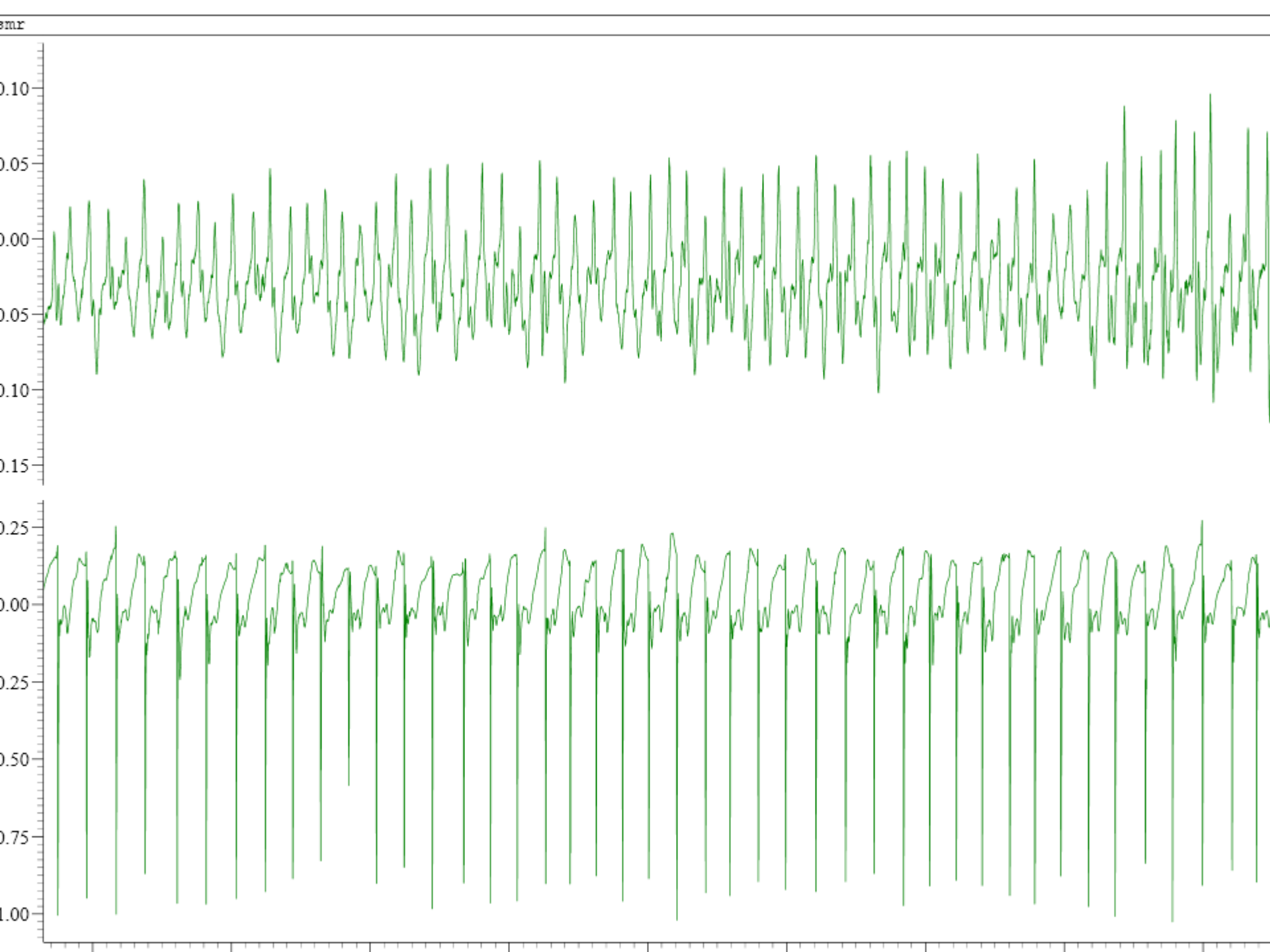
How are these people different?



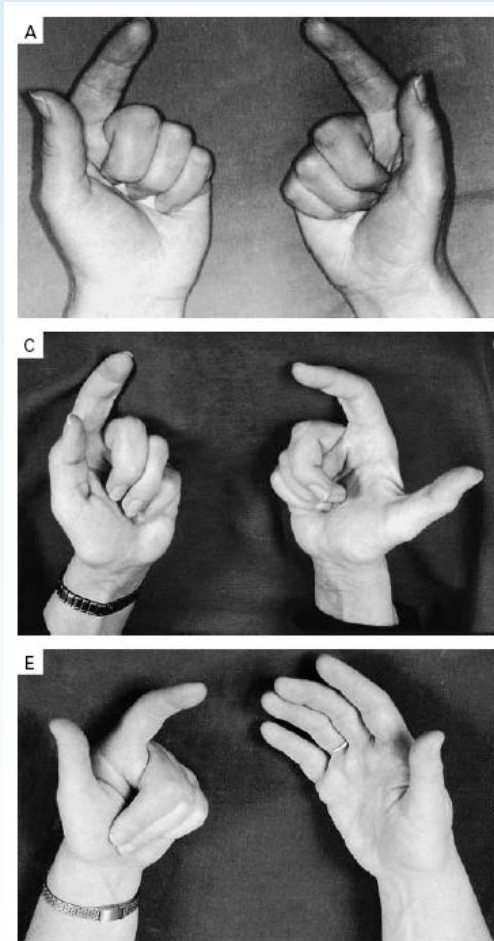
tremor1.smr







Fixed Dystonia

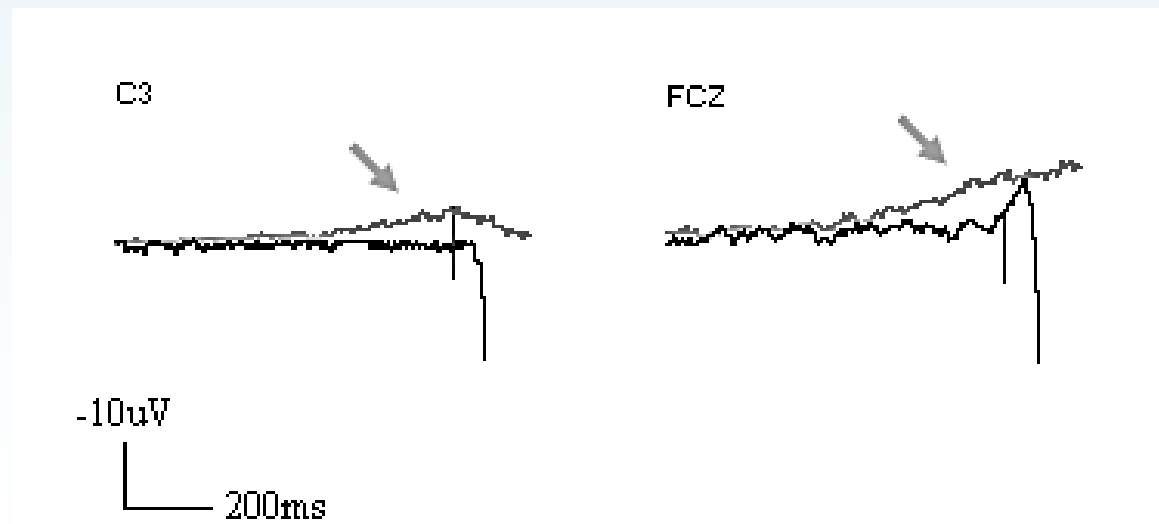


Van Hilten et al, NEJM, 2004

Bhatia et al, Brain, 1993

Pre-movement EEG potentials occur in Psychogenic Myoclonus

- Bereitschaftspotential : a negative EEG potential beginning ≈ 1 s prior to movement.



Movement Disorders
 Vol. 24, No. 16, 2009, pp. 2344–2349
 © 2009 Movement Disorder Society

Idiopathic Spinal Myoclonus: A Clinical and Neurophysiological Assessment of a Movement Disorder of Uncertain Origin

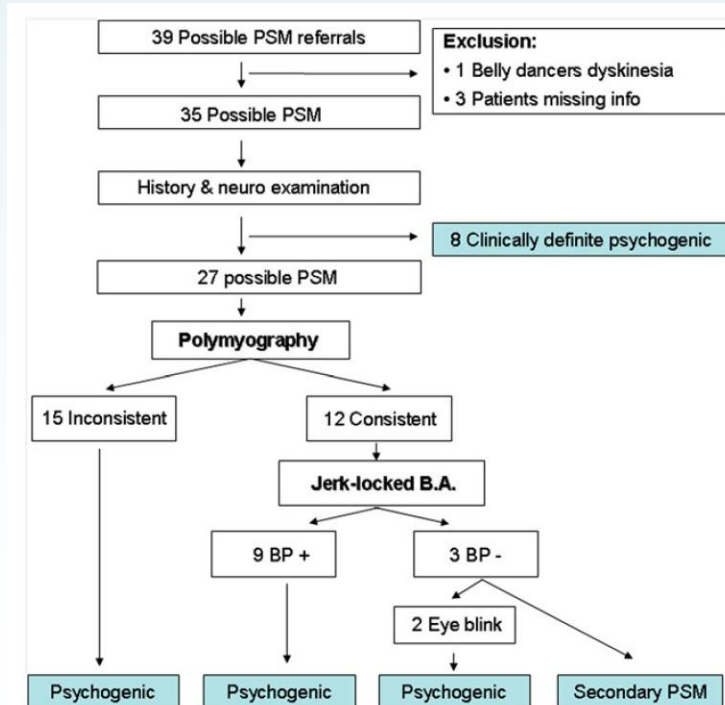
Marcello Esposito, MD,¹ Mark J. Edwards, PhD,² Kailash P. Bhatia, MD,²
 Peter Brown, MD,² and Carla Cordivari, MD^{1*}

J Neurol (2010) 257:1349–1355
 DOI 10.1007/s00415-010-5531-6

ORIGINAL COMMUNICATION

Axial jerks: a clinical spectrum ranging from propriospinal to psychogenic myoclonus

Sandra M. A. van der Salm · Johannes H. T. M. Koelman ·
 Samantha Henneke · Anne-Fleur van Rootselaar ·
 Marina A. J. Tijssen



How are they different?

- It looks like they are deliberately making the movement.
- Symptoms conform to personal beliefs about neuroanatomy/physiology.
- The patients do not report the movement to be voluntary/deliberate.

So what's going on?

Malingering?

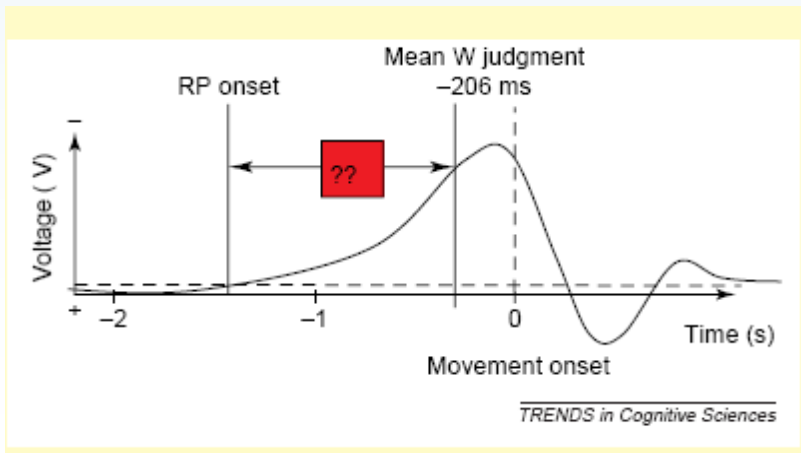
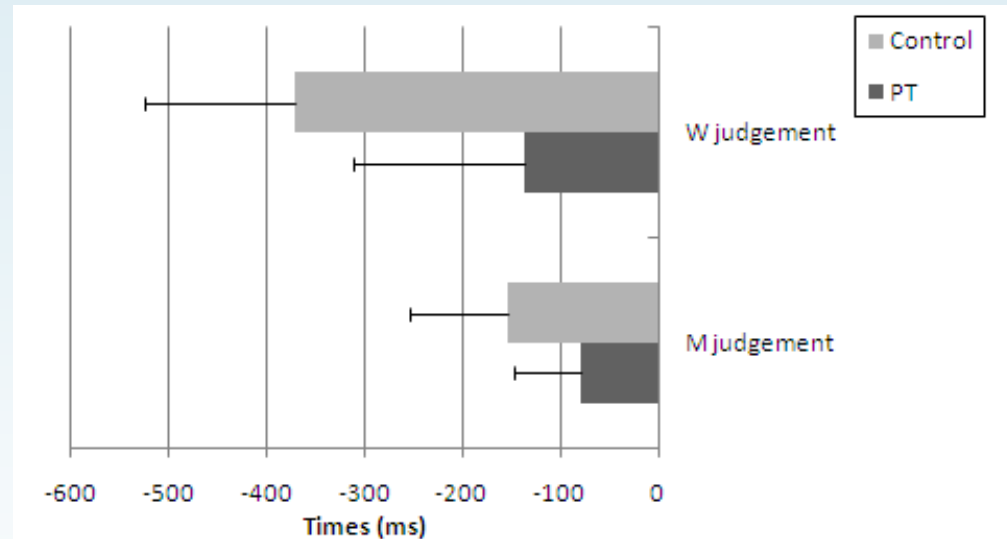
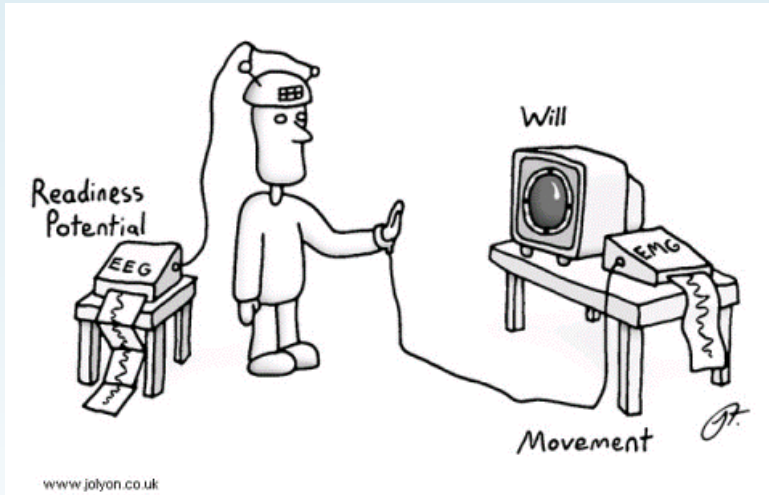
Conversion?

Somatisation?

Some problems with the “retribution” model

- Adverse life events are by no means universal.
- Adverse life events often happen many years prior to onset of symptoms.
- Does not explain symptom “selection”.
- Irrefutable hypothesis without a neurobiological mechanism.

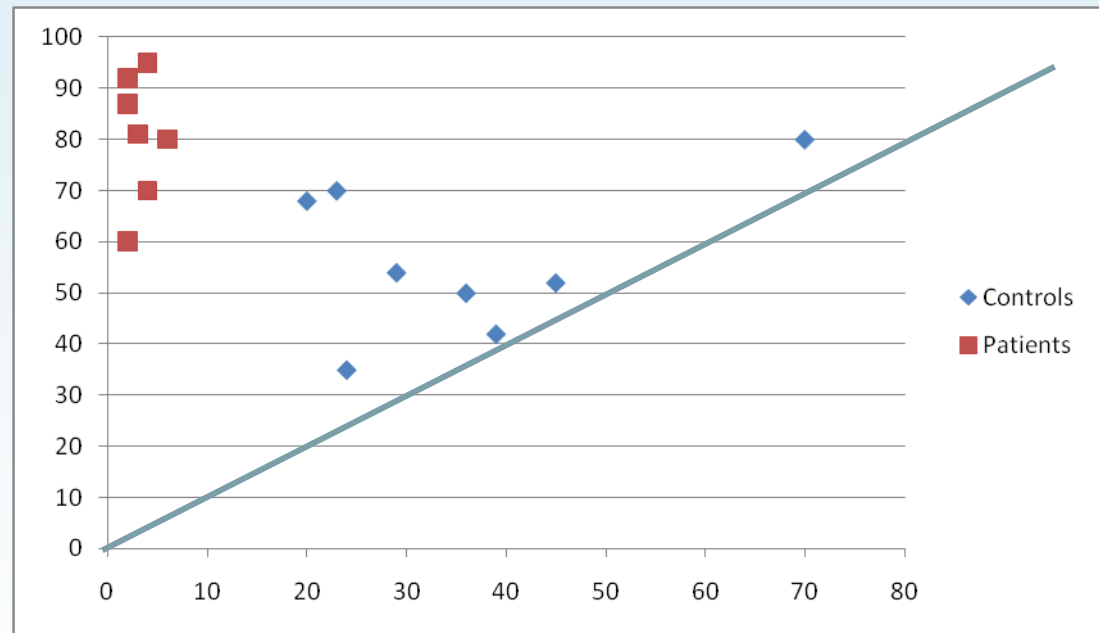
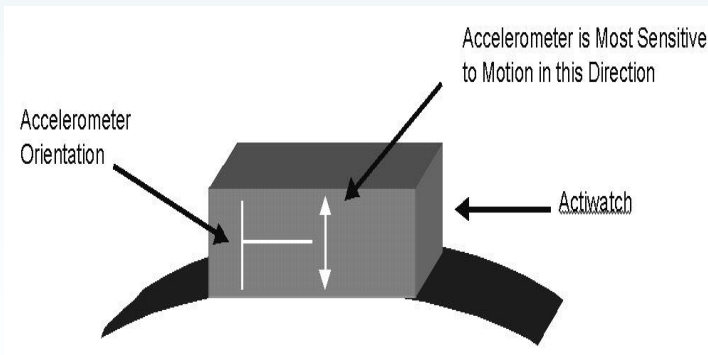
The “Libet” paradigm – revealing a mechanism for dissociation?



	M judgement (SD)	W judgement (SD)
PT	-79 (69)	-138 (173)
Control	-154 (100)	-371 (154)

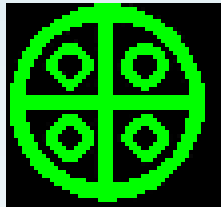
Edwards et al, submitted

What happens away from the clinic? From Disorders of Movement to Disorders of Perception

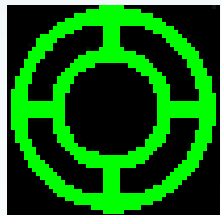


Demonstrating a subtle influence of consciousness on learning and behaviour.

Get ready...

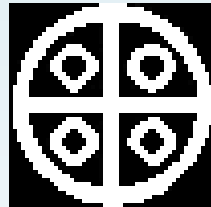


OR

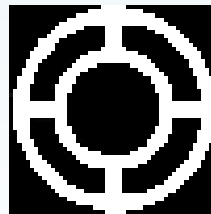


1.5 s

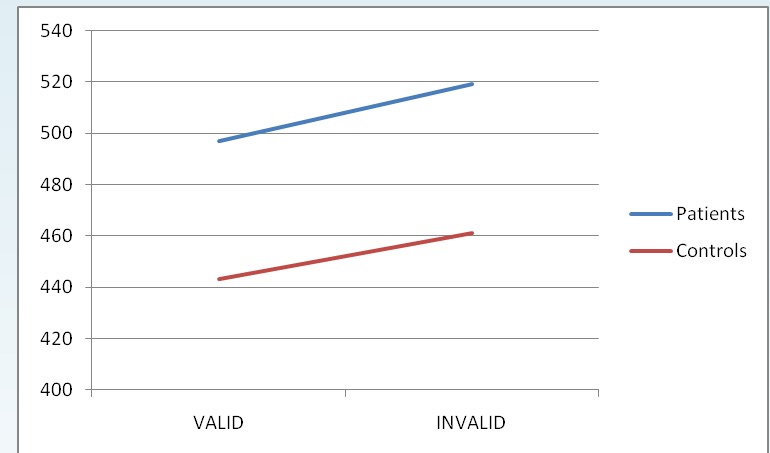
Go!



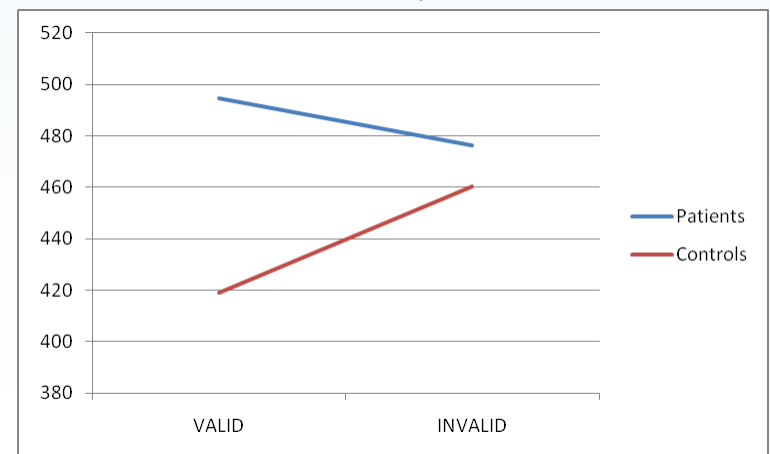
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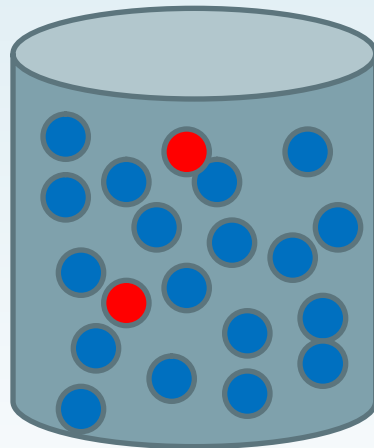
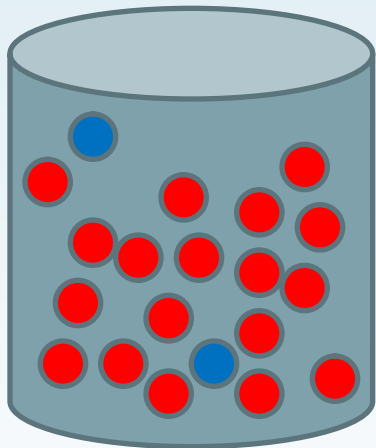
Probability = 75%



Probability = 95%



Bringing it together: Learning Style Favours The Development of False Beliefs



R R R B R R R R R B B R R R R R R R B

Group	Initial Certainty	Draws to Decision
Psychogenic	63.6% ±15,67	2.6±1.43
Controls	50.0% ±0,00	6.8±1.3

Jumping to Conclusions

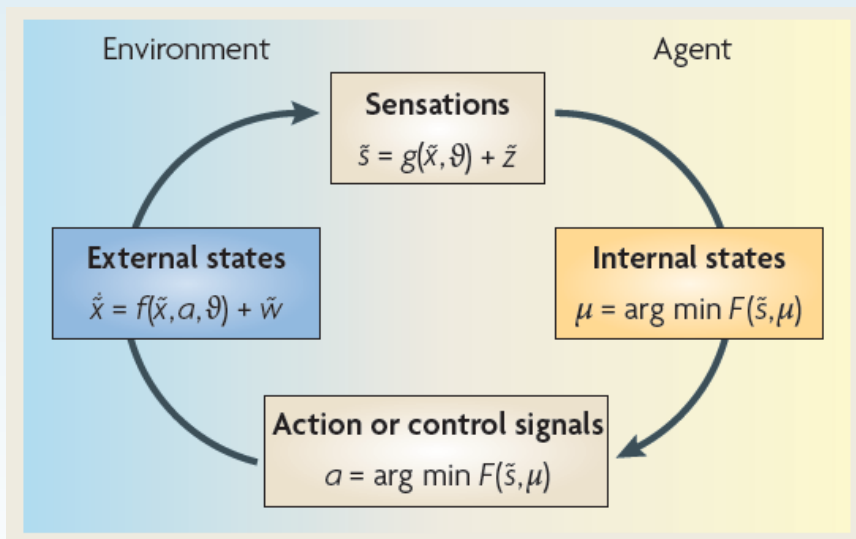
Limited Ability to Reverse
Learned Behaviours

Abnormal Illness Belief

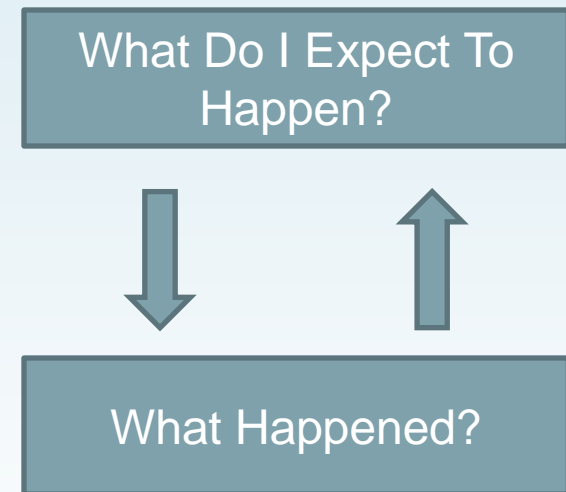
Erroneous Perception of Motor
and Sensory Experience

Impact of
Attention/Consciousness

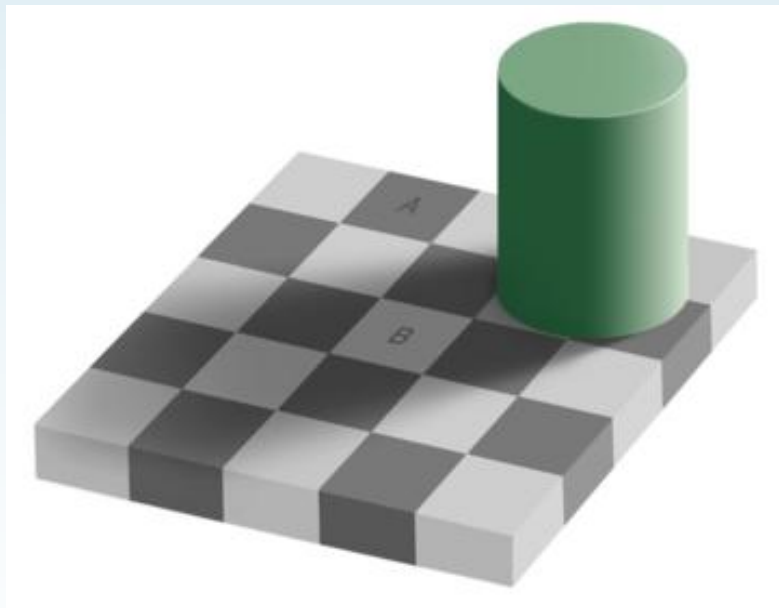
How the Brain Works – from Bayes to Free Energy...



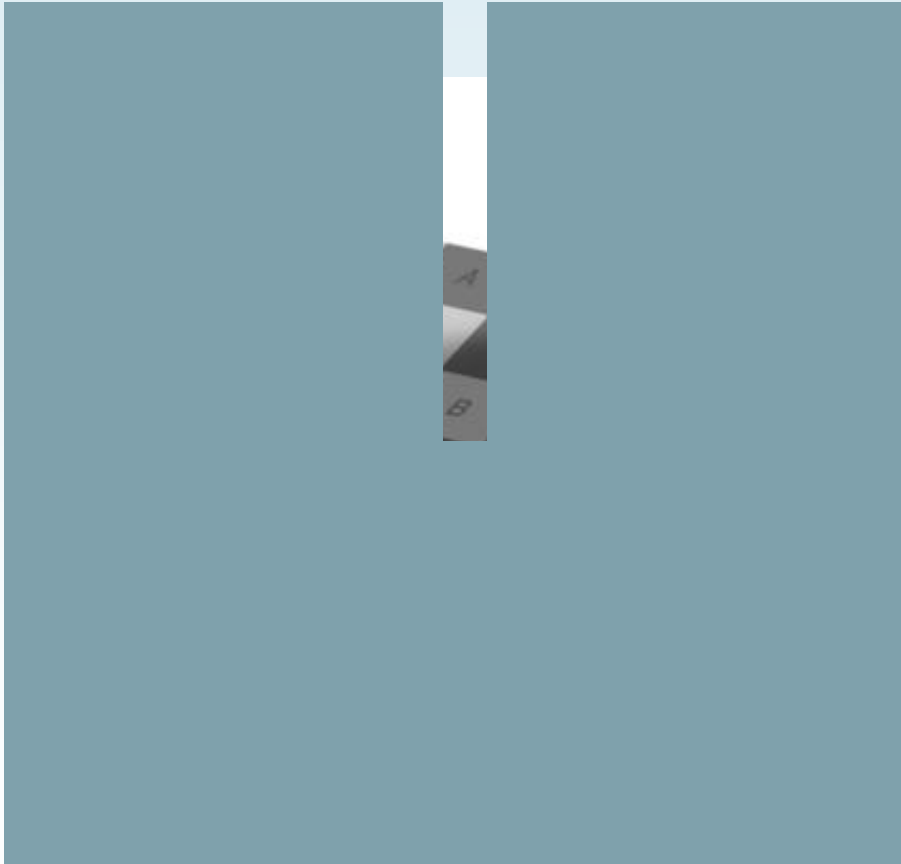
Friston, 2010



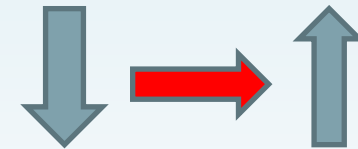
The Primacy of Expectations



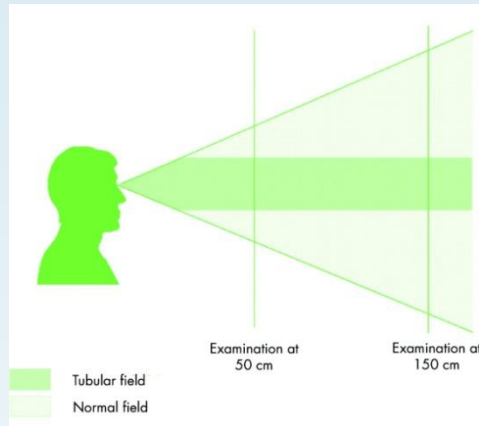
The Primacy of Expectations



What Do I Expect To Happen?



What Happened?



Personal and cultural illness beliefs



Physical Triggering Events

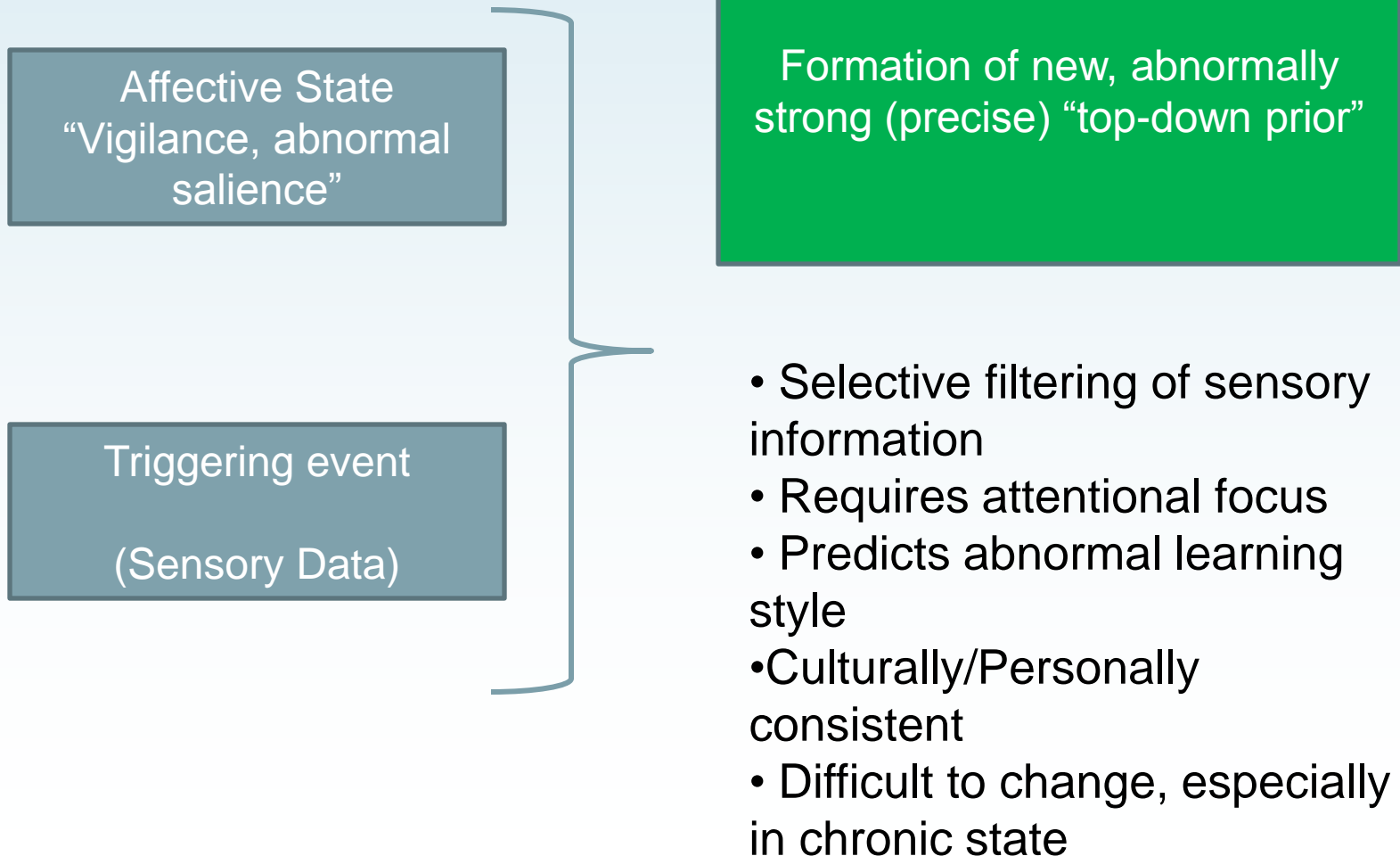


“Curative” Placebo Effects



Mass Psychogenic Events

Functional Symptoms as “top down” delusions



How does this translate into what we might do in the clinic?

- Provides a holistic model that makes sense to patients and therapists.
- A neurobiologically plausible (and testable) hypothesis.
- Can drive the development of new (and some old) treatments.

Collaborations and Acknowledgements

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