

Making sense of miracle cures

How psychology makes alternative medicine 'work'

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Complementary and alternative medicine (CAM)

- Most common examples? acupuncture, homeopathy, chiropractic; herbal medicine; bioenergy healing; reflexology; crystal therapy; aromatherapy



Complementary and alternative medicine (CAM)

- Most common examples? acupuncture, homeopathy, chiropractic; herbal medicine; bioenergy healing; reflexology; crystal therapy; aromatherapy
- Some other examples: autogenic training, Alexander technique, acupressure, applied kinesiology, Ayurveda, Bach flower remedies, Bowen technique, bio-magnetic therapy, biodynamic massage, Buteyko Preath therapy, craniosacral therapy, Chi Kung (no contact), colour analysis therapy, dowsing, energy balancing, electro-crystal therapy, iridology, Indian head massage, kinesiology, the Melchizedek method, the metamorphic technique, naturopathy, nutritional therapy, on-site massage, pilates, polarity therapy, Qi Gong, Pranic healing, Reichian therapy, Reiki, spiritual healing, Shiatsu, Shen therapy, touch for health, Tai Chi (non-contact), trigger point therapy, Tuina, zero balancing.

CAM: Plausibility, evidence

CAM	Clash with mainstream scientific explanations
Homeopathy	Memory of water
Acupuncture	Qi, meridians, needling
Chiropractic	Subluxations, homuncular validity
Reflexology	Homuncular validity, energies
Bio-energy healing	Energy fields, interruptions
Crystal therapy	Energy fields
Tai Chi	Energy fields, interruptions



CAM: Plausibility, evidence

Empirical evidence as per Cochrane Library records

CAM	Clash with mainstream scientific explanations	Number of review mentions	Number of trials/ participants	Uses conclusively supported
Homeopathy	Memory of water	4	15/4,148	None
Acupuncture	Qi, meridians, needling	63	Pain: 16/4,096	None
Chiropractic	Subluxations, homuncular validity	1	5/236	None
Reflexology	Homuncular validity, energies	2	2/43+	None
Bio-energy healing	Energy fields, interruptions	0	n/a	n/a
Crystal therapy	Energy fields	0	n/a	n/a
Tai Chi	Energy fields, interruptions	2	5/400	Movement

CAM is popular!

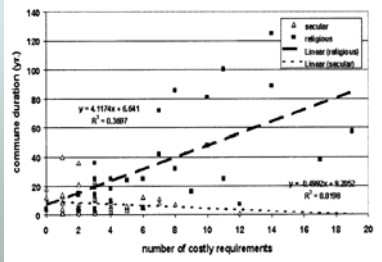
"For the past 24 years I have argued that patients should be able to gain the benefit of the 'best of both worlds'—complementary and orthodox—as part of an integrated approach to healing. Many of today's complementary therapies are rooted in ancient traditions that intuitively understood the need to maintain balance and harmony with our minds, bodies and the natural world"

— Prince Charles (World Health Assembly, 25/5/06)



Socio-cultural explanations

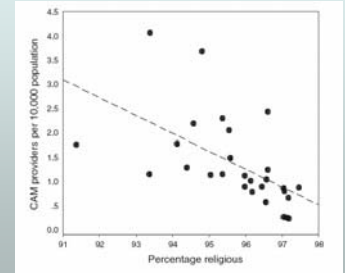
- Adaptive nature of unproductive behaviour
- Luddism, technophobia
- Economics of rationality



Sosis & Bressler (2003)

Socio-cultural explanations

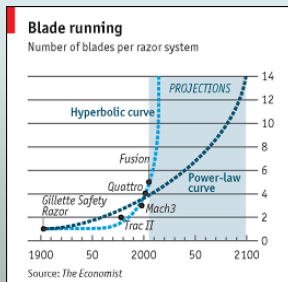
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Hughes (2006)

Socio-cultural explanations

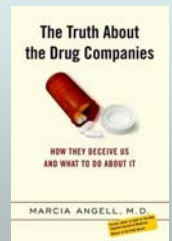
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The Economist, 18 March 2006

Conspiratorial explanations

- "Big Pharma" not objective
 - "No money for CAM research"
 - "No interest because CAM remedies not patentable"
- Formal research methods don't "work"
- Epistemology is subjective
 - "No such thing as objective truth (and that's objectively true!)"



Placebos & placebo effects

- "Placebo" – the inert intervention
- "Placebo effect" – the curative result
 - Used for centuries (millennia?)
 - 1800s: OED, modern definition
 - 1954: Lancet, "The Humble Humbug"
 - 1955: Beecher, "The Powerful Placebo", JAMA



Placebos & placebo effects

Moderators of placebo

1. Placebo can be influenced by characteristics of the patient
 - Neuroticism, extraversion, esteem, etc.
2. Placebo can be influenced by characteristics of the treatment
 - Convincingness
 - Ultrasound for pain – Hashish et al. (1988)
 - Seriousness
 - Placebo heart surgery – Cobb et al. (1959); Diamond et al. (1960)
3. Placebo can be influenced by characteristics of the therapist



Placebos & placebo effects

Physician factors

1. Placebo can be influenced by approach of physician to patient
 - Physician expectancies, self-fulfilling prophecies
 - Rosenthal effect
2. Placebo can be influenced by approach of patient to physician
 - Patient expectancies
 - Beta-blocker Heart Attack Trial – Horwitz et al. (1990)
3. Placebo can be influenced by conditioning



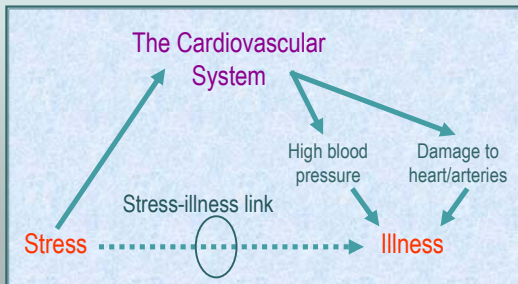
Placebos & placebo effects

Biological mechanisms

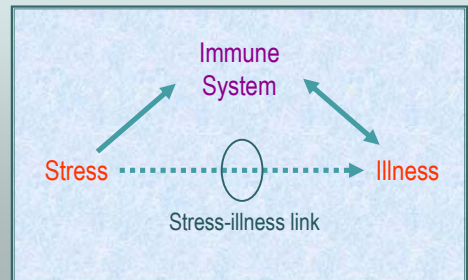
1. Placebo can result from stress reduction
 - Cardiovascular reactivity
 - Psychoneuroimmunology
2. Placebo can result from endorphin-related mechanisms
 - Dependence-forming
 - Blocked by naloxone
 - PET studies show association with dopamine
3. Placebo can originate from latent evolutionary endowment
 - Latent capacity for self-cure



Cardiovascular Reactivity



Psychoneuroimmunology (PNI)



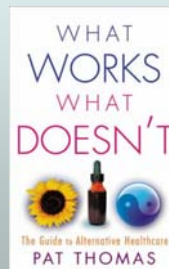
Placebos & placebo effects

Not all placebos are actually placebos...

- True "placebo" associated only with acute phase response (Evans, 2003)
- Often, *other* (non-placebo) mechanisms responsible for treatment illusions, both in real life and in "double-blind" research



Non-placebo treatment effects: Perceptual misattribution



"The first thing that consumers need to do in order to begin to make sensible healthcare choices is to cure themselves of expert-itis.

Often this requires a substantial leap of faith and a belief in the miracle of your own body.

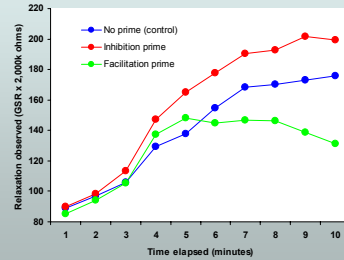
You don't need a PhD or a degree of any kind to understand your own body – you live in it."

Non-placebo treatment effects: *Perceptual misattribution*



- 'James-Lange' theory
- Stanley Schachter, Columbia University

Non-placebo treatment effects: *Expectancy effects*



Howard & Hughes (in press)

Non-placebo treatment effects: *Other examples*

- Medical artifacts
 - Spontaneous fluctuation of symptoms in disease; spontaneous remission rates; habituation to symptoms; residual effects of prior medication use; subsiding side-effects of prior medication
- Limitations of causal reasoning:
 - Problems with: probabilistic computation; deduction; extrapolation across time; interpreting consensus; the appreciation of base-rates; the evaluation of anecdotal evidence; and superstitious behavior.

Conclusion

- Baby and bathwater: the baby is safe!
 - No paradigm shifts required to explain CAM
- Ample alternative explanations for 'effects' of alternative medicine
 - Placebo just *one* of several relevant influences
- 'Holistic science' needed to elucidate CAM effects?
 - Biomedicine helps explain *if*
 - Psychology helps explain *how*

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