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**Milton, Damian (2019)** *Autistic experience and cognitive neuroscience (part one: presentation by Damian Milton).* **In: Guest Lecture to Karl Friston and colleagues, UCL, 12 March 2019, London, UK. (Unpublished)**

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# Autistic experience and cognitive neuroscience

*Damian Milton, Dinah Murray and Jonathan Green*



A Mismatch of Salience

Explorations of the Nature of Autism from Theory to Practice

By Dr. Damian E M Milton
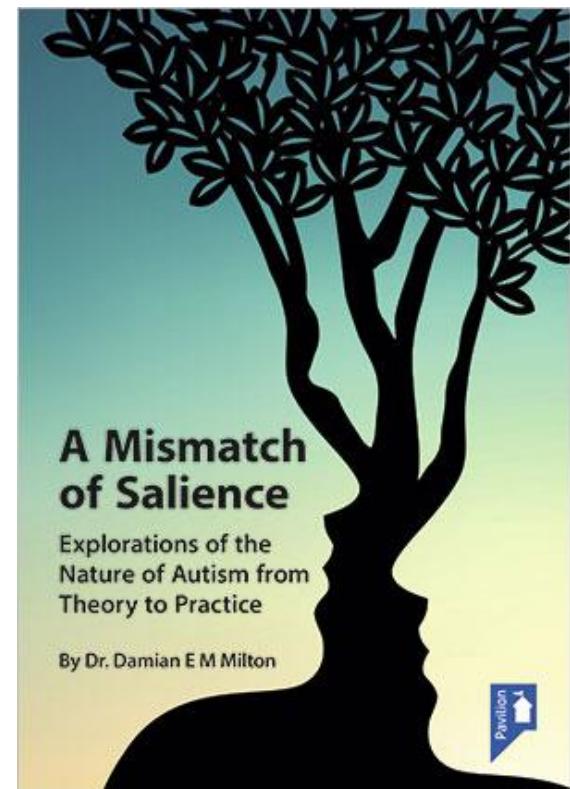
# Theories of autism

- The triad of impairments: social communication, social interaction and restricted interests/behaviours.

- Executive functioning

- Weak central coherence

- Theory of mind

- Context blindness

- An alternative view: monotropism, interests and the 'double empathy problem'

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# An interest model of autism

- "We suggest that the uneven skills profile in autism depends on which interests have been fired into monotropic superdrive and which have been left unstimulated by any felt experience." (Murray et al. 2005: 143).

- This will be expanded upon later…

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# "Filling in the gaps" – a crossover

- "We suggest specifically that attenuated Bayesian priors - 'hypo-priors' - may be responsible for the unique perceptual experience of autistic people, leading to a tendency to perceive the world more accurately rather than modulated by prior experience." (Pellicano and Burr, 2012)

- "Due to differences in the way autistic people process information, this filling of gaps tends not to occur (at least to the same extent). Autistic people have a tendency to be more literal, and work upon what is tangible and present, thus conclusions are reached through available information (without filling in the gaps)." (Milton, 2013)

- We now think it is not as simple as this…

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# Alignment

- "Building on the predictive coding framework, we suggest that social alignment is mediated by a three-component feedback loop – an error-monitoring system that reacts to misalignment, an alignment system, and a reward system that is activated when alignment is achieved. We describe herding-related syndromes (autism, loneliness) and call for innovative research to investigate the links between the levels of alignment." (Shamay-Tsoory et al. 2019)

- Asymmetrical reciprocity (Milton, 2016)

# Mutual incomprehension

- "95% of people don't understand me".

- "Friends are overwhelming".

- "Adults never leave me alone".

- "Adults don't stop bullying me".

- Quotes taken from Jones et al. (2012).

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# The 'double empathy problem'

- A case of mutual incomprehension?

- Breakdown in interaction between autistic and non-autistic people as not solely located in the mind of the autistic person (Milton, 2012.

- Theory of autistic mind can often leave a great deal to be desired.

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# Misattunement and dealignment

- Garfinkel and the breaching experiment.

- "Priorities (interests) differ widely. An exchange of wrong predictions – NT autism 'priors' and autistic NT 'priors' both go wrong." (Dinah Murray – personal exchange 2019).

- The dialectical misattunement hypothesis: "…views psychopathology not merely as disordered function within single brains but also as a dynamic interpersonal mismatch that encompasses various levels of description." (Bolis, 2017).

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# Misalignment and social stigma

- The denigration of difference (Tajfel and Turner, 1979).

- 'In' and 'out' groups, stigma and discrimination.

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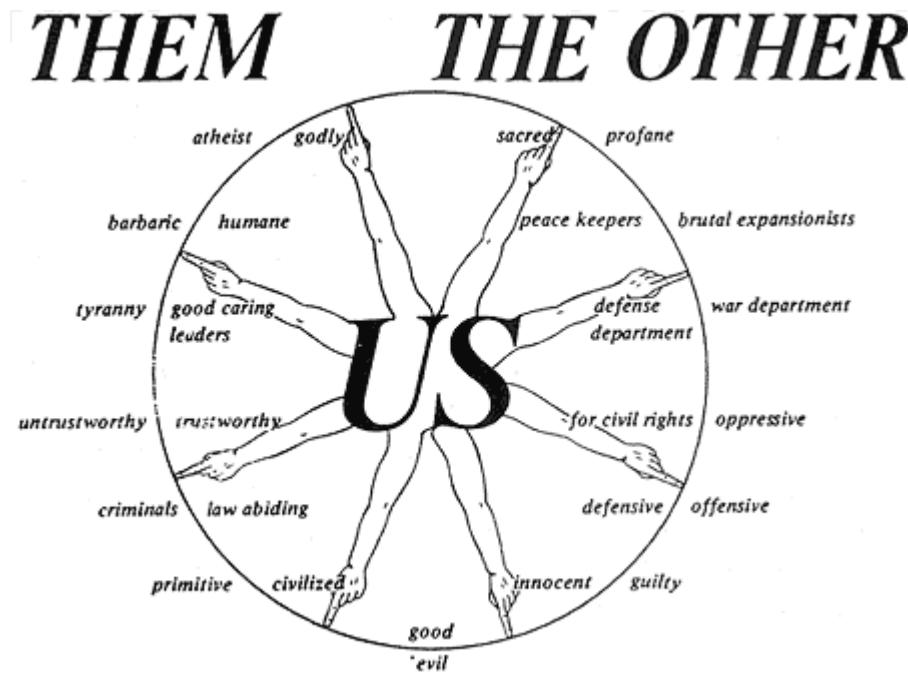
- "There have been numerous attempts to explain the enigma of autism, but existing neurocognitive theories often provide merely a refined description of 1 cluster of symptoms. Here we argue that deficits in executive functioning, theory of mind, and central coherence can all be understood as the consequence of a core deficit in the flexibility with which people with autism spectrum disorder can process violations to their expectations." (Van de Cruys et al., 2014).

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# Areas of concern / opportunity

- Resisting the assumption of pathology

- Difficulties in autism not only due to errors from not making predictions

- Distress experienced can also be due to things that are predictable

- Accounting for dissonance, particularly within social interaction

- Impact on learning theory and social psychological theory

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# Normalcy and the bell curve

- "Extremes of any combination come to be seen as 'psychiatric deviance'. In the argument presented here, where disorder begins is entirely down to social convention, and where one decides to draw the line across the spectrum." (Milton, 1999 - spectrum referring to the 'human spectrum of dispositional diversity').

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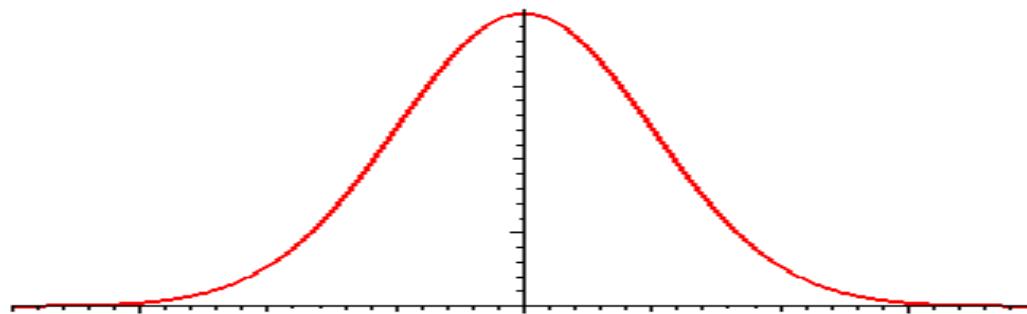
# Autistic patterns that need explaining (among others)

- 1. Uneven abilities - spiky skills
- 2. Total absorption in current interest
- 3. Extreme variety between people re polarisation of likes and dislikes, and knowledge and ignorance
- 4. Slow topic switching
- 5. Motor coordination problems (eg toe walking)
- 6. Enhanced processing
- 7. Sensory hyper and hypo experiences
- 8. Flow states and 'repetitive behaviours'
- 9. Stuckness (inertia and autistic catatonia)
- 10. Perseverance / perseveration
- 11. Discombobulation/ meltdown - need for recovery time
- 12. All or nothing feelings, Alexithymia
- 13. Decisions based on exactitude without emotional valence in mind
- 14. Actions based on emotion rather than decision
- 15. Higher level integration ('executive function' issues)
- 16. Atypical recourse to context
- 17. Patchy relating with others
- 18. Diversity in use of language

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