University of Birmingham

Darren Rhodes

Doctoral Researcher
TIME LAB

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About

Title of PhD: A Bayesian Model of Perceived Timing

Supervisor: Dr Massimiliano Di Luca

Darren is undertaking doctoral research into how the brain can use temporal expectations to construct perception. Darren is using psychophysics and Bayesian modeling in order to construct a new model of perceived timing that unifies existing models of time.

Qualifications

BSc. First Class Honours. Psychology with Neuropsychology, Bangor University, Wales.

Biography

Darren previously worked at an experiential education centre in the mountains of North-West Massachusetts (**www.christodora-summer.org (http://www.christodora-summer.org)**) before moving back to the UK to pursue a degree in Psychology. Darren first worked with Prof. Kimron Shapiro, investigating the effects of similarity on visual working memory, before working with Dr. Stephan Boehm (Priming), Dr. Nick Davis (Robot-Human Interaction) and Prof. Robert Rafal (Attention). After his time in Bangor, Darren made the trip to Saarland University in Germany in order to continue his research into selective attention and memory with Prof. Hubert Zimmer.

Research

Research interests

Darren is interested in how the temporal statistics in the environment actively contribute towards the construction of perception. Entraining to and using temporal regularities in the environment leads to better performance in perceptual and recognition tasks. Why? What are the mechanisms behind these effects?

Do current models of time perception capture the necessary constraints of probability in time? Darren would argue they would not and has helped construct a new model of perceived timing that unifies current models of time perception.

In particular, Darren has several research themes:

- How Temporal Expectations can be modeled using the Bayesian Framework
- The application of the Bayesian model of Time Perception to other tasks and domains
- How Temporal Expectations can influence the Perception of Pain
- How the Perception of Pain can influence the Perception of Time
- Individual differences in Time Perception
- Evolution of Time Perception
- Timing in Groups (In collaboration with Dr. Mark Elliott & Prof. Alan Wing)
- Balance Correction using Light Touch (in collaboration with Dr. Satoshi Endo, Dr. Leif Johannsen & Prof. Alan Wing)

Other activities

Darren is a supporter of the greatest football team on the planet: the mighty Walsall FC.

Darren believs that Karl Pilkington is one of the greatest visionary thinkers of our generation. Think, and ask questions. Creativity and discovery are the foundations of knowledge.

Publications

Conference Presentations

Rhodes, D. (2011). Change-detection accuracy is influenced by the degree of similarity between novel objects. Undergraduate Thesis.

Rhodes, D. (2011, March). Change-detection accuracy is influenced by the degree of similarity between novel objects. Talk at the Welsh branch of the British Psychological Society's Annual Conference, Swansea, Wales.

Rhodes, D. (2011, October). Unweavering the mind's online workspace: Filtering in visual working memory. Talk at the conference of the international research training group 'Adaptive Minds', St. Goar, Germany.

Rhodes, D. (2011, December). Cultural variation in verbal versus non-verbal neuropsychological function. Talk at the seminar for cognitive and motivational variables, Saarbrücken, Germany.

Rhodes, D. & Di Luca, M. (2013, February). Time and time again: Repeated stimuli create temporal expectations. Poster presented at TIMELY workshop and conference, Corfu, Greece.

Rhodes, D. & Di Luca, M. (2013, August). Time and time again: Isochronous sequences create temporal expectations. Poster presented at ECVP 2013, Bremen, Germany.

Rhodes, D. (2013, September). Bayesian perception of isochronous sequences. Talk at RPPW 2013, Birmingham, UK.

Rhodes, D. & Di Luca, M. (2013, October). Exposure to anisochronous rhythms negates the Bayesian prior effect on temporal expectations. Poster presented at TIMELY workshop, Granada, Spain.

Rhodes, D. (2014, March). Bayesian perception of isochronous sequences. Talk presented at TIMELY final conference, Corfu, Greece.

Journal Articles in Progress

Di Luca, M. & Rhodes, D. (in preparation). A Bayesian model of perceived timing.

Rhodes, D. & Di Luca, M. (in preparation). Time for make believe: Assumptions of temporal regularity influence the perceived timing of audiovisual stimuli.

Rhodes, D. & Di Luca, M. (in preparation). Up and Down: Amplitude but not pitch changes in isochronous sequences influence perceived timing of isochronous stimuli.

Rhodes, D. & Di Luca, M. (in preparation). Perceptual distortions due to temporal expectations extend to audiovisual simultaneity judgments.

Rhodes, D. & Di Luca, M. (in preparation). Individual differences in a novel perceptual timing task.

Brownless. B., Rhodes, D. & Elliott, M.T. (in preparation). Timing in the third person: The influence of visual and tactile cues on movement synchrony within a group of three.

Ko, S., Rhodes, D. & Derbyshire, S. (in preparation). Time for Pain: noxious stimulation during an interval reproduction task raises temporal attention.

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