Matthew B. Thompson

PhD Candidate (Psychology)
NICTA Graduate Researcher

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Citizenship: Australian

Education

Degrees	Field	GPA	Institution	Year
B.Sc. (Hons I)	Psychology	6.73 / 7.00	The University of Queensland	2007
B.Inf.Tech.	Information Technology	6.04 / 7.00	The University of Queensland	2006
B.Sc.	Psychology	6.04 / 7.00	The University of Queensland	2006

Professional and Academic Positions Held

The University of Queensland, Australia

2009-present **PhD Candidate**
School of Psychology, The University of Queensland, QLD, 4072

2009-present **Tutor**
School of Psychology, The University of Queensland, QLD, 4072

2008-2009 **CERG Research Coordinator**
Cognitive Engineering Research Group (CERG)
ARC Key Centre for Human Factors and Applied Cognitive Psychology
School of Psychology, The University of Queensland, QLD, 4072

2006-2008 **Research Assistant**
Cognitive Engineering Research Group (CERG)
ARC Key Centre for Human Factors and Applied Cognitive Psychology
School of Psychology, The University of Queensland, QLD, 4072

Department of Defence, Australian Government

2005-2006 **Summer Vacation Student / Consultant**
Defence Science and Technology Organisation (DSTO)
Maritime Operations Division
Australian Technology Park, NICTA Building
Suite 101, 13 Garden Street Eveleigh NSW, 2015

Union College, The University of Queensland

2005-2005 **Resident Mentor**
Union College
Upland Road, St. Lucia, QLD, 4072

Publications

Peer Reviewed Journals

Tangen, J. M., Murphy, S., & **Thompson, M. B.** (2011). Flashed face distortion effect: Grotesque faces from relative spaces. *Perception* advance online publication, doi:10.1068/p6968

Tangen, J. M., **Thompson, M. B.**, & McCarthy D. J. (2011). Identifying Fingerprint Expertise. *Psychological Science*, doi:10.1177/0956797611414729

Sanderson, P. M., Thompson, C. L., **Thompson, M. B.**, Watson, M. O., Muthukrishna, M., & Murphy, M. (accepted pending revisions). Auditory alarm effectiveness: Evaluation of alternative alarm sets with anesthesiologists. *Anesthesia & Analgesia*.

Thompson, M. B., Tear, M. J. & Sanderson, P. M. (2010). Multisensory integration with a head-mounted display: The role of response method. *Human Factors*, 52(1).

Harrison, W. J., **Thompson, M. B.**, & Sanderson, P. M. (2010). Multisensory integration with a head-mounted display: Background visual motion and sound motion. *Human Factors,* 52(1).

Thompson, M. B., & Sanderson, P. M. (2008). Multisensory integration with a head-mounted display: Sound delivery and self-motion. *Human Factors,* 50(5), 789-800.

Peer Reviewed Conference Papers

Thompson, M. B., Tangen, J. M., Treloar, R., & Ivison, K. J. (2010). Humans matching fingerprints: Sequence and Size. *Proceedings of the 54th Annual Meeting of the Human Factors and Ergonomics Society.* San Francisco, CA: September 27-October 1.

[Awarded 3rd place for Best Student Paper from the Cognitive Engineering and Decision Making Technical Group]

Tear, M. J., **Thompson, M. B.**, & Tangen J. M. (2010). The importance of ground truth: An open-source biometric repository. *Proceedings of the 54th Annual Meeting of the Human Factors and Ergonomics Society.* San Francisco, CA: September 27-October 1.

Tear, M., Harrison, W., **Thompson, M. B.**, & Sanderson, P. M. (2009). Head-mounted displays and multisensory integration: Replications and challenges. *Proceedings of the 53rd Annual Meeting of the Human Factors and Ergonomics Society.* San Antonio, TX: 19-23 October.

[Short listed for HFES Alphonse Chapanis Best Student Paper Award]

Thompson, M. B., & Sanderson, P. (2008). Multisensory integration with a head-mounted display and auditory display. *Proceedings of the 52nd Annual Meeting of the Human Factors and Ergonomics Society.* New York, NY, 22-26 September, 2008, 1292-96.

Conference Abstracts

Thompson, M. B., Tangen, J. M., McCarthy, D. J. (2011). Accuracy and Expertise in Human Fingerprint Identification. *Proceedings of the 38th Australasian Experimental Psychology Conference.* Auckland, New Zealand 28-30 April.

Thompson, M. B., Tangen, J. M., McCarthy, D., & Tear, M. J. (2010). Ground truth: On certainty in forensic decision-making research. *Proceedings of the 20th International Symposium on the Forensic Sciences of the Australian and New Zealand Forensic Science Society (ANZFSS)*. Sydney, Australia: 5-9 April.

[Awarded Best Paper in Management and Quality Assurance]

Tangen, J. M., **Thompson, M. B.**, & McCarthy, D. (2010). Enhancing performance in human decision making: The role of similarity in forensic identification. *Proceedings of the 20th International Symposium on the Forensic Sciences of the Australian and New Zealand Forensic Science Society (ANZFSS)*. Sydney, Australia: 5-9 April.

Thompson, M. B., Tangen, J. M., Ivison, K. J.,Treloar, R. (2010). Expertise in matching fingerprints and faces*. Proceedings of the 37th Australasian Experimental Psychology Conference*. Melbourne, Australia: 8-10 April.

Thompson, C., Sanderson, P., Watson, M., **Thompson, M.**, Muthukrishna, M., & Murphy, S. (2010). Testing auditory alarm effectiveness with three different alarm sets. *Poster to be presented at the Australian and New Zealand College of Anaesthetists Annual Scientific Meeting (ANZCA ASM 2010).* Christchurch, NZ: 1-5 May 2010.

Jenkins, S., Liu, D., **Thompson, M. B**., & Sanderson, P. M. (2009). Managing the risks of display evaluation studies in the OR. *Abstract for Society for Technology in Anesthesia (STA2009) Annual Meeting.* San Antonio, TX: 14-17 January, 2009. July 2007.

Thompson, M., Lowe, S., & Sanderson, P. (2007). Role of motion and sound in use of head-mounted displays (Abstract). *Proceedings of the 8th International Multisensory Research Forum (IMRF2007).* Sydney, 5-7 July, 2007.

Thompson, M., B. (2007). Crossmodal integration with a head-mounted display and auditory display options: Is there cause for concern? *Abstract presented at 13th Annual School of Psychology Honours Conference,* The University of Queensland, 6 October, 2007.

Theses

Thompson, M. B. (2007). Crossmodal integration with a head-mounted display and auditory display options: Is there cause for concern? *Unpublished Honours Thesis*, The University of Queensland, Brisbane, Australia

Other

Thompson, M. B. (2006). Recommendations for measuring situation awareness in an amphibious command post exercise. *Unpublished Technical Report.* Defence Science and Technology Organisation. Jan. [Commercial-in-Confidence].

Invited Talks

Elanora State High School, Queensland, Australia.
Invited by Mr Jai McCulloch.
Thompson, M. B. (2010) What's a career in science like?

University of California, Irvine, Los Angeles, USA.
Invited by Associate Professor Simon A. Cole and Professor Elizabeth F. Loftus.
Thompson, M. B. (2009) "The Science of Matching Fingerprints: Similarity, Sequence, and Size"

University of Lethbridge, Alberta, Canada.
Invited by Professor John R. Vokey.
Thompson, M. B. (2009) "The Science of Matching Fingerprints: Similarity, Sequence, and Size"

Airlie Beach Rotary Club, Airlie Beach, Queensland, Australia.
Invited by Pier Vallegra.
Thompson, M. B. (2009) "Fingerprints, Science and CSI: Miami"

Scholarships

Australian-American Fulbright Commission –
Fulbright Queensland Scholarship $46,000 (2011-2012)

The prestigious Fulbright program is the largest educational scholarship of its kind, created by U.S. Senator J. William Fulbright and the U.S. Government in 1946. Aimed at promoting mutual understanding through educational exchange, it operates between the U.S. and 155 countries. In Australia, the scholarships are funded by the Australian and U.S. Governments and corporate partners and administered by the Australian-American Fulbright Commission in Canberra.

Queensland Government –
Smart Futures PhD Scholarship Program $7,000 p.a. (2009-2011)

The Smart Futures PhD Scholarship Program is part of the Queensland Government's Innovation Skills Fund and provides funding for outstanding PhD students to undertake innovative research in Queensland.

National ICT Australia (NICTA) –
Research Project Award $8,282 p.a. (2009-2011)

NICTA is Australia's Information and Communications Technology (ICT) Centre of Excellence. NICTA Research Project Awards are awarded to students who show potential to be future leaders of research and development in Australia.

Australian Government –
Australian Postgraduate Award (APA) $20,427 p.a. (2009-2011)

The Australian Postgraguate Award (APA) provides financial support to domestic postgraduate students of exceptional research promise who undertake their higher degree by research.

Australian Government –
Commonwealth Learning Scholarship $2,000 p.a. (2006-2007)

The Commonwealth Scholarships program provides financial support to high-achieving undergraduate students to assist with the costs associated with higher education.

Defence Science and Technology Organisation (DSTO) –
Summer Vacation Scholarship $3,700 (2005-2006)

Each year DSTO offers a limited number of scholarships over the University summer vacation period. The primary objective of the scholarship is to support the education of promising tertiary students by providing them with a means by which they can engage in and gain experience in research during the university summer vacation period.

Teaching

Judgment & Decision-Making – PSYC3052 – Tutor (2010, 2011)

Every day we make decisions by relying on our personal theories about how things are supposed to work. But our reliance on these rules is paid for at the cost of accuracy. We tend to see what we expect to see and believe what we're told. One goal of this course is to figure out how everyday decision making can be improved.

Introduction Physiological and Cognitive Psychology – PSYC1020 – Tutor (2009)

This course spans a variety of topics including basic psychological processes such as perception, consciousness, learning, motivation, memory, thinking and sexual behaviour as well as the cognitive or mental causes of these phenomena. Students are given opportunities to participate in both classic state-of-the-art psychological research and to demonstrate their understanding of the research process.

Awards and Honours

CEDM Travel Award (2010)
Cognitive Engineering and Decision Making Group, Human Factors and Ergonomics Society

Postgraduate Cutting Edge Research Award (2010)
Head of School, School of Psychology, The University of Queensland

ATSE Young Science Ambassador Award (2009)
President, Australian Academy of Technological Sciences and Engineering (ATSE)

6 x Dean's Commendation for High Achievement (2003-2006)
Executive Dean, The University of Queensland

6 x Letter of Commendation (2003-2006)
Head of School (Psychology), The University of Queensland

3 x Outstanding Academic Achievement Award (2003-2005)
Head of College (Union College), The University of Queensland

Final Year Project Excellence Award (2006)
Head of School (Information Technology and Electrical Engineering), The University of Queensland

School Vice-Captain; Dux (Music); and Academic Distinction, Community Service and Cultural Awards (2002)
School Principal, Elanora State High School

Areas of Research

Flashed Face Distortion Effect (2011-present)

We discovered a novel face distortion effect resulting from the fast-paced presentation of eye-aligned faces. When cycling through the faces on a computer screen, each face seems to become a caricature of itself and some faces appear highly deformed, even grotesque. The degree of distortion is greatest for faces that deviate from the others in the set on a particular dimension (eg if a person has a large forehead, it looks particularly large). This new method of image presentation, based on alignment and speed, could provide a useful tool for investigating contrastive distortion effects and face adaptation.

Revealing structure in images: Assisting identification in forensics (2009-present)

Fingerprint identification has been a crucial source of evidence in court for over 100 years. The misidentification of crime-scene fingerprints is potentially devastating -- innocent people could be wrongly convicted, and guilty people could be wrongly acquitted -- and serious cases of misidentification have occurred. Although the current identification process primarily involves human perception and judgement, very little psychological research has been conducted on these processes.

I investigate the perceptual and cognitive processes underlying identification of complex visual stimuli such as fingerprints. My research will provide tools, techniques and training methods to aid professionals in correctly identifying forensic evidence.

Multisensory Integration with Advanced Displays (2007-present)

Every day we humans continually combine information from our eyes and ears. But how does this work in our day-to-day lives? My research examines how our senses are combined when using advanced technology as we move about the world. Results show that people find it hard to combine sights and sounds when what they're seeing and what they're hearing is not moving together.

Research Involvement

Evaluation of Air Services Australia Flight Plan Conflict Function (2010-present)

Design and Evaluation of Melodic Medical Equipment Alarms in Anaesthesia (2008-2011)

Clinical Trial Evaluation of Respiratory Sonification for Anaesthesia (2008-2010)

Multisensory Integration with Head-Mounted Displays (2008-2010)

Clinical Trial Evaluation of Head-Mounted Displays for Anaesthesia (2008-2010)

Head-Mounted Display Evaluation in a Part-Task Trainer (2008)

Inattentional Blindness and Head-Mounted Displays (2006-2008)

Advanced Auditory Displays and Head-Mounted Displays: Advantages and Disadvantages for Monitoring by the Distracted Anesthesiologist (2006)

Effect of Noise on Anaesthesia Monitoring (2006)

Professional Affiliations

Human Factors and Ergonomics Society (HFES)
Member (2006-present)
- Cognitive Engineering and Decision Making Technical Group
- Health Care Technical Group
- Internet Technical Group
- Forensic Technical Group

Human Factors and Ergonomic Society – The University of Queensland Student Chapter (HFES-UQ)
President (2010-present)
President-Elect (2009)
Founding Member (2009)

Australian Science Communicators (ASC)
Financial Member (2009-present)

On Campus Alumni Subchapter (OCA) – School of Information Technology and Electrical Engineering
Vice-President (2008)

Certifications

Australian Music Examinations Board
Fifth Grade Theory of Music (2001)
Fourth Grade Theory of Music (2002)

Professional Association of Diving Instructors (PADI)
Open Water Diver (2001)

Great Barrier Reef Marine Park Authority
Tourism Staff Certificate (2001)

Supervision of Undergraduate Thesis Research

Honours Theses

Elise Jones (co-supervisory role with Dr Jason Tangen, 2011)
Alice Towler (co-supervisory role with Dr Jason Tangen, 2011)
Billy Sung (co-supervisory role with Dr Jason Tangen, 2011)
Sean Murphy (co-supervisory role with Dr Jason Tangen, 2010)
Renee Treloar (co-supervisory role with Dr Jason Tangen, 2009)
Kathleen Ivison (co-supervisory role with Dr Jason Tangen, 2009)
Morgan Tear (co-supervisory role with Prof. Penelope Sanderson, 2008)
Will Harrison (co-supervisory role with Prof. Penelope Sanderson, 2008)

Consulting Activities

Department of Defence, Australian Government

Human Factors Consultant (July 2006)
"Assessing Situation Awareness for a Command Post Exercise"
Department of Defence, Australian Government
Defence Science and Technology Organisation (DSTO)
Maritime Operations Division
Australian Technology Park, NICTA Building
Suite 101, 13 Garden Street Eveleigh NSW 2015

Community Service

"ATSE Extreme Science Experience Volunteer and Photographer"

Australian Academy of Technological Sciences and Engineering (ATSE)
Brisbane, Australia (2011)

"Queensland Talking Scientist at National Science Week"

Royal Queensland Show (The EKKA)
Brisbane, Australia (2010)

"TEDxBrisbane Photographer"

Queensland State Library
Brisbane, Australia (2010)

"Science Ambassador at Elanora State High School Camp"

The University of Queensland's Heron Island Research Station
Heron Island, Great Barrier Reef, Australia (2010)

"Student and teacher computer skills training in a 3rd-world primary school"

Peter Pan School
Port Villa, Vanuatu (2008)

"School supplies fund-raising for a 3rd-world primary school"

Peter Pan School
Port Villa, Vanuatu (2008)

"Student ambassador for ICT at The University of Queensland"

Student Ambassador, School of Information Technology and Electrical Engineering
Higher Education Equity Support Program, The University of Queensland (2008)

Referees

Professor Penelope M. Sanderson, PhD FASSA
Research Leader, Cognitive and Organisational Systems Engineering (COSE)
(The University of Queensland contributed staff to NICTA)
Queensland Research Laboratory (QRL)
National Information and Communication Technology Australia (NICTA)

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Dr Jason Tangen, PhD
Lecturer, School of Psychology, The University of Queensland
(The University of Queensland contributed staff to NICTA)
Queensland Research Laboratory (QRL)
National Information and Communication Technology Australia (NICTA)

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