COWLEY, BENJAMIN ULTAN

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Full list of scientific works is available as green open access on Research Gate, via link above.

Degrees and Habilitation (title of Docent)

09.2015	Docent	"*High Performance Cognition*". Cognitive Science, Dept. of Digital Humanities, UoH. *Recommended by* Profs Risto Näätänen, Elisabet Service
12.2009	PhD	"*Player Profiling and Modelling in Computer and Video Games*", School of Computing, University of Ulster, Northern Ireland, United Kingdom. Supervisor: Darryl Charles
06.2003	Bachelor	1st class honours, *Information and Communications Technology*, School of Computer Science, Trinity College, University of Dublin, Ireland

Current Employment

05.2017→*present*	Adjunct Professor (Docent) / University Lecturer, Cognitive Science, Department of Digital Humanities, University of Helsinki (**UoH**)

Previous Positions

04.2014→04.2017	Specialist Research Scientist, Finnish Institute of Occupational Health, Helsinki
01.2012→12.2013	Habilitation, Cognitive Science unit, Faculty of Behavioural Sciences, UoH
01.2012→12.2012	Postdoctoral Researcher (part time), School of Business, Aalto University, Helsinki
01.2010→12.2011	Postdoctoral Researcher, School of Business, Aalto University, Helsinki
06.2009→12.2009	Research Assistant, Center for Knowledge and Innovation Research, Helsinki School of Economics, Helsinki
11.2005→05.2009	Doctoral student, School of Computing, University of Ulster, Northern Ireland, UK

Career breaks. Two periods of parental leave, 2016 and 2018, two months each.

Fellowships

2005→ 2008	Vice-Chancellor's Research Scholarship for doctoral studies, School of Computer and Information Engineering, University of Ulster (highly competitive, value ∼70 000€)

Supervision of theses [1]

Period	*Degree*	*Student*	*Subject, Place*
2018–	PhD	Simo Järvelä	Cognitive Science, Faculty of Arts, UoH
2018–	Masters	**5**×4th years[2]	Cognitive Science, Faculty of Arts, UoH
2018	Bachelors	**3**×3rd years	Cognitive Science, Faculty of Arts, UoH
2016→'18	Masters	Antti Veilahti	Computational Psychology, Faculty of Medicine, UoH
2015→'18	PhD	Lauri Ahonen	Cognitive Science, Faculty of Arts, UoH. *Defended 19.06.2018*
2013→'17	Masters	Kristiina Juurmaa	Cognitive Science, Faculty of Behavioural Sciences, UoH
2013→'14	Masters	Édua Holmström	Psychology, Faculty of Behavioural Sciences, UoH

1. Until 2018, supervision opportunities were limited due to working mainly in non-teaching research institutes.
2. These recently initiated supervisions are ongoing with students of Cognitive Science.

Research projects

Period	*Funder, #partners*	*Project, Description*
2014→'17	Tekes, 3	**Re:Know** (Revolution of Knowledge Work) was a Tekes flagship (see www.reknow.fi); I studied psychophysiological models of user cognition.
2011→'13	Tekes, 5	**CENT** (Computer Enabled Neuroplasticity Treatment); here I coordinated the first clinical trial of neurofeedback for ADHD in Finland.
2010	Aalto Uni., 1	**PPAX** (Play Patterns And eXperience) aimed to build theory and models for an integrated player modelling solution
2009→'12	EC FP7, 16	**TARGET** (Transformative, Adaptive, Responsive and enGaging EnvironmenT) - this large EU project aimed to build a training platform with integrated cognitive modelling.
2009→'11	EC FP7, 17	**Save Energy** explored smart methods to promote energy efficient user behaviour.

Project and personnel management roles in research projects

Project	*Role*	*Duties*
ReKnow	Work package leader	Coordinated 1 out of 5 work packages with 12 researchers & 3 RAs; conducted 3 lab experiments; developed 4 software prototypes
CENT	Coordinator, lead researcher	Built & supervised team of 8 RAs; coordinated SME partners for clinical and software development contributions
PPAX	P.I.	Coordinated 6 researchers
TARGET	Coordinator	Supervised 2 software engineers & 3 RAs in 3 lab experiments
Save Energy	Coordinator, lead researcher	Built & managed software development team with 7 hires; supervised 2 RAs in one international field experiment

Teaching Activities (all courses marked ✎ were conceived, developed, and taught independently)

Period	*Ects*	*Description; Level; Employer*
2019	5	Basics of Artificial Intelligence; Doctoral; UoH
2018	5	Cognitive Science thesis seminars; undergraduate & graduate; UoH
2018	5	Cognitive Science research seminar; undergraduate; UoH
2018→'19	5	✎ Scientific Programming theory lectures; undergraduate; UoH
2018→'19	5	Methods Lounge, a problem-focused workshop series studying analysis methods for biosignal data; Doctoral; UoH
2017→'19	10	Lab course, Group-based experiment training (3–6 students) studying cognition with psychophysiological methods; undergraduate & graduate; UoH
2017→'18	5	✎ Psychophysiological Primer, theory & practice of biosignals; Doctoral; UoH
2017→'19	5	✎ Scientific Writing in English; Doctoral; UoH
2013	3	✎ Scientific Writing in English; Masters/Doctoral; UoH
2011→'14	3	✎ Theory & practice of player-centered game design; undergraduate; Metropolia University of Applied Sciences
2007→'09	–	Teaching assistant for: *data mining, game design, programming*; undergraduate; University of Ulster, UK

Awards & prizes

2013	Competitive research support funding, €1500, Chancellors Grant, University of Helsinki
2012	Two awards for 'superior publications' (IF>1.5), €4000, HSE Foundation, Aalto University
2011	Competitive research support funding, €1500, HSE Foundation, Aalto University
2010	Competitive research support funding, €1500, HSE Foundation, Aalto University
2010	1^{st} European 'Best Learning Game Competition', 1^{st} Prize
2007	Competitive research support funding, GBP£500: Royal Academy of Engineering, UK

Institutional Responsibilties & Commissions of Trust

2018–'19	Program Board member, 1st International Conference on Human-Computer Interaction in Games (HCI-Games), at the 21st International Conference on HCI, Orlando, FL, 2019
2016–'17	Organising committee member, Quantified Employee seminar: "Time, Results, or Physiology?", Helsinki, 2017, http://quantifiedemployee.org/
2013,'16,'17,'18	Invited reviewer, Masters theses, Faculty of Behavioural Sciences, UoH
2013,'16,'17	Invited Grant Reviewer: Engineering Research Council, UK; and OeNB (Austrian Central Bank) Anniversary Fund www.oenb.at/en
2010–	Invited reviewer for international journals/conferences, incl.: Frontiers in Human Neuroscience, Lancet Psychiatry, SIGCHI CHI2011, Springer 'User Modelling and User-Adapted Interaction', IEEE 'Computer' magazine. See all: https://publons.com/a/1485637/
2007→2008	Faculty of Computing & Engineering Postgraduate Students' Representative, University of Ulster, UK

Editorial roles

2018	Guest Editor, Research Topic (forthcoming): "*High Performance Cognition: cognitive and neurocognitive approaches to Flow and expert performance*", Frontiers in Psychology (Cognitive Science)

Scientific Referees

Prof Martti Vainio	Department of Digital Humanities, PO Box 9, FI-00014 University of Helsinki, Finland. martti.vainio@helsinki.fi
Prof Minna Huotilainen	Faculty of Education, PO Box 9, FI-00014 University of Helsinki, Finland. minna.huotilainen@helsinki.fi
Prof Kai Puolamäki	Department of Computer Science, PO Box 68, FI-00014 University of Helsinki, Finland. kai.puolamaki@helsinki.fi

Major Collaborations

Prof Niklas Ravaja	Psychophysiology and learning in games, School of Business, Aalto University, Helsinki. *8 joint papers*
Dr Darryl Charles	Machine learning for player modelling, School of Computer and Information Engineering, University of Ulster, UK. *7 joint papers*
Prof Giulio Jacucci	Psychophysiology of human-computer interaction, Faculty of Science, University of Helsinki. *1 joint paper*
Dr Guillaume Chanel	Psychophysiological methods in game research, Swiss Centre for Affective Sciences, University of Geneva. *2 joint papers*
Prof Minna Huotilainen	Neural correlates of human-computer interaction, Faculty of Education, University of Helsinki. *2 joint papers*
Prof Kai Puolamäki	Psychophysiology of collaborating knowledge workers, FIOH, Helsinki. *2 joint papers*
Adj.Profs Satu & Matias Palva	Magnetoencephalography of adult ADHD, Neuroscience Center, University of Helsinki. *study ongoing*
Prof Maija L. Castrén	Epileptic electroencephalography & attention, Faculty of Medicine, University of Helsinki. *1 joint paper*
Adj.Prof Otto Lappi	High performance cognition and Flow in games, Cognitive Science, University of Helsinki. *study ongoing*

Invited Presentations

2017 "*Collaboration and physiology - Pair working in the wild*", Quantified Employee seminar, Helsinki

2017 "*Cognitive Perspectives on Flow in Games*", Nanyang Technological University, Singapore

2017 "*Applications of Data Mining to real-world data*", Nanyang Technological University, Singapore

2014 "*Player-Centered Game Design*", Spring symposium, Department of Media, Aalto University

2013 "*Learning and Flow, in games and psychophysiology*", at the symposium "Fostering learning through emotions, virtual reality and video-games", Swiss Center for Affective Sciences, University of Geneva, Switzerland

2013 "*Psychophysiological correlates of learning in games*", Autumn Cognitive Science symposium, Faculty of Behavioural Science, UoH

2013 "*Computational Modelling of Visual Attention*", Spring Cognitive Science symposium, Faculty of Behavioural Science, UoH

2008 "*Optimal Experience In Computer Games: Can Enjoyment be Measured?*", Research Graduate School conference, University of Ulster, UK

Membership of scientific societies

2012→ *present*	Federation of European Neuroscience Societies (FENS)
2013→2014	European Brain and Behaviour Society (EBBS)
2012→2013	International Society for Neurofeedback Research (ISNR)
2012→ *present*	Brain Research Society of Finland (BRSF)
2008→ *present*	Isaac Newton Institute for Mathematical Sciences, United Kingdom

Higher and further education, where relevant

Ongoing part-time degree: MSc Life Sciences Informatics, School of Computer Science, University of Helsinki

Period	*Description*	*Extent*	*Location*
2018	Human Brain Connectivity	5ects	Aalto University, Helsinki
2018	University Pedagogy 1, "Learning in Higher Education"	5ects	University of Helsinki
2018	University Pedagogy 3.1, "Academic Supervision"	5 ects	University of Helsinki
2017	Time series analysis for neuroscience data	5 ects	Aalto University, Helsinki
2012, '14, '15	Matlab development training	1 day	Mathworks, Helsinki
2013	Magnetoencephalography training program	1 week	Elekta Oy, Helsinki
2013	Baltic/Nordic neuroinformatics summer school	1 week	University of Kaunas, Lithuania
2013	Transcranial Magnetic Stimulation symposium	1 day	Aalto University, Helsinki
2012	Neurofeedback (BCIA accredited course)	1 week	Radboud U., Nijmegen, Holland
2011	fMRI introductory course	2 days	Aalto University, Helsinki
2010, 2011	Computational neuroscience summer school	1 week	Max Planck Inst., Göttingen, Germany
2009	Brain imaging technology seminar	3 days	Aalto University, Helsinki
2006, 2007	Project management training	2 days	University of Ulster, UK

Miscellaneous scientific achievements and interests

2016 I edited a major review and primer for application of psychophysiology in human-computer interaction, coordinating 12 contributors to produce a mini-handbook (Cowley, Filetti, *et al*, 2016).

2016 I designed and developed EEG processing software that allows researchers to computationally select optimal method-parameters for their dataset (see Cowley, Korpela, & Torniainen,2016,2017; Cowley & Korpela, 2018; download version 1.0 at https://github.com/bwrc/ctap).

2014 As part of a prospective program of work to study the neural correlates of attention using the tools of experimental comparative psychology, I travelled to Colombia to develop research networks. I gave a talk at the 17th Meeting of the International Society for Comparative Psychology, Bogotá; following this, I travelled to the north-west area to meet local anthropologists and lay the groundwork to begin studies with the local indigenous population, the Kogi Native Americans. The Kogi culture is relatively unchanged since pre-Colombian times, and as it is non-literate but highly information-rich, offers a unique opportunity to study the comparative relationship between culture, attention, and brain development (following the format of pioneering work by Rotenburg and colleagues in Siberia).

2013 I conducted the first clinical trial of neurofeedback in Finland, with several valuable but as-yet unpublished outcomes. I designed two novel laboratory protocols (first described in posters (see e.g. http://dx.doi.org/10.13140/RG.2.1.5035.2886) and available at https://github.com/zenBen/Kanizsa_Prime; second with documentation forthcoming). I co-designed and coordinated development of the implementation platform (available at https://github.com/CBRUhelsinki/CENTplatform, paper forthcoming). I also undertook six international research exchanges to bring the needed domain expertise to Finland.

2012 I produced a software module for an immersive 3D learning game, to classify emotional/cognitive states of the learner in real-time (Bedek, Cowley, *et al*, 2013; Fantato, Cowley, Ravaja, 2013).

2011 I designed and produced a web-based serious game to inspire energy efficient behaviours (Cowley, *et al*, 2011); deployed and evaluated the game in a controlled experiment to analyse efficacy of design strategies (Cowley and Bateman, 2017).

Funding success, as PI or application co-author

Total k€	*Project title*	*Funding source*	*Period*	*Role in project*	*Role in application*
2618	Revolution of Knowledge work (Re:Know), #5159/31/2014	TEKES: Finnish Funding Agency for Innovation	2015→'17	WP Leader[1]	Co-author, with PIs
1500	Computer Enabled Neuroplasticity Treatment (CENT), #440078	TEKES: Finnish Funding Agency for Innovation	2011→'13	Lead Researcher/ coordinator[2]	Co-author, with manager Markus Kivikangas & PI Christina M Krause
25	Play Patterns And eXperience (PPAX)	Aalto University	2010→'11	PI	Main author

1. My role (leading 1 of 5 WPs) was to coordinate studies of cognitive state in HCI, including: using EEG to detect interaction of executive functions with global-local attention; using EEG to detect impact of motivation on information search; reviewing psychophysiology methods in HCI; developing methods to process EEG data; and using physiology to detect social linkage of collaborating programmers.
2. My role was to coordinate the project and design the clinical trial and all supporting experiments for the intake and outtake.

LIST OF PUBLICATIONS

Bibliometrics: 31 peer-reviewed publications:

- 19 journal papers, 16 as first author;
- one book, two book chapters, all as first author;
- eight conference proceedings, four as first author;
- monograph doctoral dissertation

Also, unreviewed works, and software or other research outputs:

- seven conference posters/oral presentations, and eight invited presentations (see above);
- 12 preprints, eight as first author;
- four software repositories

Publication lists below are categorised according to Finnish National classification system JUFO. **Ten most important publications are marked by** ❄ . Open access papers marked: oa . Papers with equal contributions from first two authors are denoted: ≅ . Citation counts are obtained using R platform, from Elsevier Scopus with scopusAPI package, and from Google Scholar with scholar package. Counts are listed alongside each paper as: `Scopus` | `Scholar`. For forthcoming papers, see personal website.

Total citations (excl. est. self-cites) >290 | >900, *h*-index 7 | 11

A1 – Original scientific articles.

174 | 390	❄	**Cowley, B.**, Charles, D., Black, M., & Hickey, R. (2008). Toward an understanding of flow in video games. Computers in Entertainment, 6(2), 1–27.
21 | 31		**Cowley, B.**, Moutinho, J., Bateman, C., & Oliveira, A. (2011). Learning Principles and Interaction Design for "Green My Place": a Massively Multiplayer Serious Game. Entertainment Computing, 2(2), 10.
6 | 16		**Cowley, B.**, Heikura, T., & Ravaja, N. (2013). Learning loops - interactions between guided reflection and experience-based learning in a serious game activity. Journal of Computer Assisted Learning, 29(4), 348.
10 | 18		**Cowley, B.**, Ravaja, N., & Heikura, T. (2013). Cardiovascular physiology predicts learning effects in a serious game activity. Computers & Education, 60(1), 299–309.
3 | 8		**Cowley, B.**, Charles, D., Black, M., & Hickey, R. (2013). Real-time rule-based classification of player types in computer games. User Modeling and User-Adapted Interaction, 23(5), 489–526.
4 | 9		**Cowley, B.**, Kosunen, I., Lankoski, P., Kivikangas, J. M., Jarvela, S., Ekman, I., ... Ravaja, N. (2014). Experience Assessment and Design in the Analysis of Gameplay. Simulation & Gaming, 45(1), 41–69.
3 | 12	oa	**Cowley, B.**, Fantato, M., Jennett, C., Ruskov, M., & Ravaja, N. (2014). Learning When Serious: Psychophysiological evaluation of a Technology-Enhanced Learning game. Journal of Educational Technology & Society, 17(1), 3–16.
2 | 8	oa ❄	**Cowley, B.**, & Ravaja, N. (2014). Learning in Balance: Using Oscillatory EEG Biomarkers of Attention, Motivation and Vigilance to Interpret Game-Based Learning. Cogent Education, 1(1), 1–23.
1 | 1	oa	**Cowley, B.**, Kirjanen, S., Partanen, J., & Cástren, M. L. (2016). Epileptic Electroencephalography Profile Associates with Attention Defects in Children with Fragile X Syndrome: review and case series. Frontiers in Human Neuroscience, 10(353).
4 | 7	oa ❄	**Cowley, B.**, Holmström, É., Juurmaa, K., Kovarskis, L., & Krause, C. M. (2016). Computer Enabled Neuroplasticity Treatment: A Clinical Trial of a Novel Design for Neurofeedback Therapy in Adult ADHD. Frontiers in Human Neuroscience, 10(205).
4 | 7	oa ❄ ≅	Ahonen, L., **Cowley, B.**, Torniainen, J., Ukkonen, A., Vihavainen, A., & Puolamäki, K. (2016). Cognitive Collaboration Found in Cardiac Physiology: Study in Classroom Environment. PLoS One, 11(7), 89–103.
0 | 0	oa ❄	**Cowley, B.**, & Lukander, K. (2016). Forest, Trees, Dynamics: Results from a Wisconsin Card Sorting Test variant Protocol for Studying Global-Local Attention and Complex Cognitive Processes. Frontiers in Psychology: Cognitive Science, 7(238).

A1 – Original scientific articles- *cont.*

6 | 20 oa ❄ **Cowley, B.**, & Charles, D. (2016). Behavlets: a Method for Practical Player Modelling using Psychology-Based Player Traits and Domain Specific Features. User Modeling and User-Adapted Interaction, 26(2), 257–306.

2 | 4 oa **Cowley, B.**, Korpela, J., & Torniainen, J. E. (2017). Computational Testing for Automated Preprocessing: a Matlab toolbox to enable large scale electroencephalography data processing. PeerJ Computer Science, 3:e108.

0 | 2 oa **Cowley, B.**, Bateman, C. (2017). Green My Place: Evaluation of a Serious Social Online Game Designed to Promote Energy Efficient Behaviour Change. International Journal of Serious Games, 4(4), 71-90.

1 | 2 ≅ oa ❄ **Cowley, B. U.**, Ahonen, L., Hellas, A., & Puolamäki, K. (2018). Biosignals reflect pair-dynamics in collaborative work: EDA and ECG study of pair-programming in a classroom environment. Nature Scientific Reports, 8(1).

1 | 1 oa ❄ **Cowley, B. U.**, & Korpela, J. (2018). Computational Testing for Automated Preprocessing 2: practical demonstration of a system for scientific data-processing workflow management for high-volume EEG. Frontiers in Neuroscience: Brain Imaging Methods, 12(236).

0 | 0 **Cowley, B. U.** (2018). Studying the integrated functional cognitive basis of sustained attention with a Primed Subjective-Illusory-Contour Attention Task. Nature Scientific Reports, 8(1).

A2 – Review.

- | 211 ❄ Kivikangas, J. M., Chanel, G., **Cowley, B.**, Ekman, I., Salminen, M., Järvelä, S., & Ravaja, N. (2011). A review of the use of psychophysiological methods in game research. Journal of Gaming and Virtual Worlds, 3(3), 181–199.

18 | 37 ❄ **Cowley, B.**, Filetti, M., Lukander, K., Torniainen, J., Henelius, A., Ahonen, L., . . . Jaccuci, G. (2016). The Psychophysiology Primer: a guide to methods and a broad review with a focus on human–computer interaction. Foundations and Trends in HCI, 9(3–4), 151–308.

Note: this is a long-form review released as a book and journal.

A3 – Contribution to book.

7 | 12 **Cowley, B.**, Bedek, M., Heikura, T., Ribiero, C., Petersen, S. A. S., Ribeiro, C., . . . Petersen, S. A. S. (2012). The QUARTIC Process Model to Support Serious Games Development for Contextualized Competence-Based Learning and Assessment. In M.-M. Cruz-Cunha (Ed.), Handbook of Research on Serious Games as Educational, Business and Research Tools: Design and Development (pp. 491–519). New York: IGI Global.

1 | 5 **Cowley, B.** (2014). The QUARTIC Process Model for Developing Serious Games: 'Green My Place' Case Study. In N. Lee (Ed.), Digital Da Vinci: Computers in the Arts and Sciences (1st ed., pp. 143–172). New York: Springer Science+Business Media.

A4 – Article in conference publication.

9 | 26 **Cowley, B.**, Charles, D., Black, M., & Hickey, R. (2006). User-System-Experience Model for User Centered Design in Computer Games. In Adaptive Hypermedia and Adaptive Web-Based Systems (Vol. 4018, pp. 419–424). Dublin: LNCS.

- | 9 **Cowley, B.**, Charles, D., Black, M. M., & Hickey, R. J. (2006). Using Decision Theory for Player Analysis in Pacman. In Proceedings of the SAB Workshop on Adaptive Approaches to Optimizing Player Satisfaction (pp. 41–50). Roma, Italy.

2 | 4 oa **Cowley, B.**, Charles, D., Black, M. M., & Hickey, R. J. (2007). Data-Driven Decision Theory for Player Analysis in Pacman. In AAAI Workshop - Technical Report (Vol.WS-07-01, pp. 25–30). Stanford University, Stanford, Ca: AAAI Press.

A4 – Article in conference publication- *cont.*

3 | 9	**Cowley, B.**, Charles, D., Black, M., & Hickey, R. (2009). Analyzing player behavior in pacman using feature-driven decision theoretic predictive modeling. In IEEE Proceedings of the 5th international conference on Computational Intelligence and Games (pp. 170–177). Milano, Italy
- | -	Kivikangas, M., Ekman, I., Chanel, G., Järvelä, S., **Cowley, B.**, Salminen, M., . . . Ravaja, N. (2010). Review on psychophysiological methods in game research. In Proceedings of DiGRA Nordic 2010: Experiencing Games: Games, Play, and Players; Stockholm: University of Stockholm.
- | 3	Bedek, M. A., **Cowley, B.**, Seitlinger, P., Fantato, M., Kopeinik, S., Albert, D., & Ravaja, N. (2011). Assessment of the Emotional State by Psycho-physiological and Implicit Measurements. In International Conference on Multimodal Interaction; Alicante, Spain: ACM.
- | -	Fantato, M., **Cowley, B.**, & Ravaja, N. (2013). Arousing learning: a psychophysiological classifier for real-time emotion recognition in technology enhanced learning environments. In P. Cunningham & M. Cunningham (Eds.), eChallenges e-2013 (pp. 1–8). Dublin: Intl Information Management Corp.
5 | 8	Torniainen, J., **Cowley, B.**, Henelius, A., Lukander, K., & Pakarinen, S. (2015). Feasibility of an electrodermal activity ring prototype as a research tool. In 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (pp. 6433–6436). Milano, Italy.

B1 – Unreferred journal article (all are oa).

Cowley, B. (2015). Psychophysiology and high-performance cognition - a brief review of the literature. PeerJ Preprints, 1373(1).

Ravaja, N., **Cowley, B.**, & Torniainen, J. (2016). A short review and primer on electromyography in human computer interaction applications. arXiv, 1608.08041.

Cowley, B. U., & Charles, D. (2016). Utility of a Behavlets approach to a Decision theoretic predictive player model. arXiv, 1603.08973.

Kosunen, I., & **Cowley, B.** (2016). A short review and primer on respiration in human computer interaction applications. arXiv, 1609.03283.

Cowley, B. U., & Torniainen, J. (2016). A short review and primer on electrodermal activity in human computer interaction applications. arXiv, 1608.06986.

Cowley, B., Korpela, J., & Torniainen, J. (2016). Computational testing for automated preprocessing: a matlab toolbox for better electroencephalography data processing. PeerJ Preprints, 2140(1).

Huotilainen, M., **Cowley, B.**, & Ahonen, L. (2016). A short review and primer on event-related potentials in human computer interaction applications. arXiv, 1608.08353.

Cowley, B. U., & Charles, D. (2016). Short Literature Review for a General Player Model Based on Behavlets. arXiv, 1603.06996.

Cowley, B. U. (2016). How to advance general game playing artificial intelligence by player modelling. arXiv, 1606.00401.

Cowley, B. U., & Charles, D. (2016). Adaptive Artificial Intelligence in Games: Issues, Requirements, and a Solution through Behavlets-based General Player Modelling. ArXiv, 1607.05028.

Ahonen, L., & **Cowley, B.** (2016). A short review and primer on electroencephalography in human computer interaction applications. arXiv, 1609.00183.

Cowley, B. U. (2017). The PSICAT protocol - Primed Subjective-Illusory-Contour Attention Task for studying integrated functional cognitive basis of sustained attention. Open Science Framework, preprint(gd5p4). Retrieved from osf.io/gd5p4

B3 – Unreferred conference proceedings (posters and oral presentations).

Cowley, B., Juurmaa, K., & Repo, M. (2012). C.E.N.T. Computer Enabled Neuroplasticity Treatment. In International Society for Neurofeedback Research (ISNR) conference 2012, Orlando, Florida, USA. DOI: 10.13140/RG.2.1.3304.7280

B3 – Unreferred conference proceedings (posters and oral presentations)- *cont.*

Cowley, B. U. (2013) Visual Saliency and Attention. Experimental Investigation of Saliency Processing in ADHD - Initial Findings. In Conference 'Neurizons 2013: Solving the brain puzzle', Max Planck Institute, Göttingen, Germany. DOI: 10.13140/RG.2.1.3331.3527

Cowley, B. U. (2013) Experimental Investigation of Saliency Processing in ADHD. In 45th European Brain and Behaviour Society Meeting 2013, Munich, Germany. DOI: 10.13140/RG.2.1.5035.2886

Cowley, B. U. (2014). Attention and the Gestalt.: Experimental Investigation of Gestalt Imagery Processing in ADHD using Brain Imaging [oral presentation]. In XVII Biennial Meeting of the International Society for Comparative Psychology: ICCP 2014 Bogotá, Colombia: International Society of Comparative Psychology.

Pakarinen, S., Leinikka, M., Torniainen, J., Henelius, A., **Cowley, B. U.**, Lukander, K., & Huotilainen, M. (2015). Quantifying Mental Workload With Minimally Disruptive Measurements Of Cardiac And Electrodermal Activity In Real-Life Situations [poster]. In IBRO 9th World Congress, Rio de Janeiro, Brasil. DOI: 10.13140/RG.2.1.2747.0566

Cowley, B. U., & Lukander, K. (2015). An EEG study of Fronto-Parietal Network Asymmetry in a global-local dissociation task [poster]. In FENS Spring BRAIN conference 2015, Copenhagen, Denmark. DOI: 10.13140/RG.2.2.33868.62082

Cowley, B. U., & Lukander, K. (2016). Neural Correlates of the Interaction Between Global Precedence and Sustained Attention [poster]. In Motivation and Cognitive Control Conference 2016, St. Andrews University, Scotland DOI: 10.13140/RG.2.2.31698.96969

G3 – Doctoral thesis (monograph).

Cowley, B. (2009). Player Profiling and Modelling in Computer and Video Games (Thesis). School of Computer and Information Engineering. University of Ulster, Coleraine.

I – ICT Software.

Computational Testing for Automated Preprocessing - a Matlab toolbox extending EEGLAB functionality for batch processing of EEG – https://github.com/bwrc/ctap

The PSICAT protocol - Primed Subjective-Illusory-Contour Attention Task for studying integrated functional cognitive basis of sustained attention – https://github.com/zenBen/PSICAT

Wisconsin-ish Global-Local Dissociation protocol for studying attention level with gestalt stimuli – https://github.com/bwrc/WishGLD

Computer Enabled Neuroplasticity Treatment platform for neurofeedback with four or eight electrode Enobio devices – https://github.com/CBRUhelsinki/CENTplatform