

Hannah J Stewart

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Research interests

- The effect of everyday hearing technology on language, cognition, academic ability and cortical acclimatisation.
- Children with atypical hearing including hearing loss and listening disorders.
- Using neuroimaging, EEG and MRI, to understand the underlying mechanisms of speech and non-speech listening skills in hearing impairment and developmental disorders.
- Creating a more realistic and child-friendly research and clinical environment.
- Auditory selective attention and stream segregation.

Employment history

Research Fellow Psychology and Language Sciences	<i>University College London, UK Aug 2019 - present</i>
Maternity leave	<i>Jan 2019 – July 2019</i>
Research Fellow Communication Sciences Research Centre	<i>Cincinnati Children's Hospital Jan 2017 – Jan 2019</i>
Postdoctoral Scientist MRC Institute of Hearing Research	<i>University of Nottingham, UK Aug 2016 – Dec 2016</i>
Tutor (1st and 2nd year) Psychology	<i>University of Nottingham, UK Aug 2013 – June 2016</i>
Lab Technician Medical School	<i>University of Aberdeen, UK Jan 2012 – Aug 2012</i>
Tutor (Secondary school) Mathematics	<i>Self employed Aug 2007 – June 2012</i>
Research Assistant Psychology	<i>University of Aberdeen, UK Summer 2008</i>
Clinical Research Assistant Psychology	<i>University of Aberdeen, UK Jan 2008 – Dec 2009</i>

Education and qualifications

PhD Hearing and cognition	<i>MRC Institute for Hearing Research, University of Nottingham, UK</i>
Thesis: Auditory selective attention in typical development and Auditory Processing Disorder	<i>2016</i>
MSc Human Cognitive Neuropsychology	<i>University of Edinburgh, UK</i>
Thesis: Objective measurement of imitation in autism	<i>2011</i>
MA Psychology (First)	<i>University of Aberdeen, UK</i>
	<i>2010</i>
BSc Artificial Intelligence and Mathematics	<i>University of Edinburgh, UK</i>
	<i>2007</i>

Teaching

Cortical connectivity

Resting state functional MRI including study design and analysis.

Admin: course design, materials, assessment and personal project supervision.

Undergraduate and postgraduate

2020

Auditory cognition and perception

Everyday listening and cognition in typical and atypical children.

Admin: personal project supervision.

Undergraduate

2017 - 2020

Statistics

Quantitative statistics, JASP, R and Matlab.

Admin: course design and materials.

Undergraduate and postgraduate

2017 - 2019

Calibration

Calibration of auditory stimuli – speech and non-speech.

Admin: course design and materials, training and supervising staff.

Research staff

2017 - 2019

Science Club

Scientific thinking, logic, problem solving and reasoning.

Admin: relations with parents and the school, annual planning, purchasing, applying for funding, managing budgets, record-keeping, recruitment, training and supervising staff.

Elementary School

2017 - 2019

Psychology undergraduate laboratories

Quantitative statistics, basic programming and research methods.

Admin: group project supervision and marking.

Undergraduate

2013 - 2016

Mathematics

Algebra, calculus, geometry and trigonometry

Admin: course design, materials and marking.

Secondary school

2007 - 2012

Students

1. Kexin Yin, MRes Speech, Language, and Cognition. University College London (2020 – present).
2. Priyanka Juneja, MSc Advanced Audiology. University College London (2020 – present).
3. Erin Cash: BSc Neuroscience Capstone. University of Cincinnati (2018 – present).
4. Sarah Ferguson: BSc Communication Sciences Capstone. University of Cincinnati (2018 – 2019).
5. Johanne Rumley: MSc Audiology. University of Copenhagen (2018).
6. Jasmin Martinez: Doctor of Audiology Capstone x 2. University of Cincinnati (2017 – 2019).
7. Briana Vamosi: BSc Medicine summer project. University of Cincinnati (2017).

Grants

Research

1. Moore, D. R., **Stewart, H. J.**, & Hunter, L. L. (2017 - 2020). Learning to listen in noise: A double-blind randomized control trial of a new noise reduction system. Oticon Foundation. \$310,000.
2. **Stewart, H. J.**, & Moore, D. R. (2018 - 2020). Assessment of virtual reality speech-in-noise. Flexi Grant, Action on Hearing Loss. £5,000.
3. **Stewart, H. J.**, Alain, C., & Moore, D. R. (2018 – 2019). A virtual reality listening test and training protocol. National Science Foundation: Engaging Learning Network. \$2,000.

4. **Stewart, H. J.** (2014). Lab exchange: Eight months in Claude Alain's lab at the Rotman Research Institute, Baycrest Hospital, Canada. ERASMUS MUNDUS Auditory Cognition Neuroscience. €15,000.
5. **Stewart, H. J.** (2012 – 2016). Doctoral stipend and tuition fees: Auditory learning and development. Medical Research Council, UK. £57,000.

Other

1. **Stewart, H. J.** (2017). Guarantors of Brain travel award. CHSCOM, Linköping, Sweden. £600.
2. **Stewart, H. J.** (2015). ERASMUS MUNDUS Auditory Cognitive Neuroscience travel award. BRAMS, Montreal, Canada. €800.
3. **Stewart, H. J.** (2015). HÖST, Karolinska Institutet, full scholarship. CHSCOM, Linköping, Sweden. £1,100.
4. **Stewart, H. J.** (2015). Experimental Psychology Society Grindley Grant (travel award). CNS, San Francisco, USA. £600.
5. **Stewart, H. J.** (2015). University of Nottingham Graduate Travel Prize. CNS, San Francisco, USA. £500.

Publications

Published

1. Hunter, L. L., Blakenship, C., Lin, L., Sloat, N., Perdew, A., **Stewart, H. J.**, Moore, D. R. (2021). Peripheral auditory involvement in childhood listening difficulty. *Ear and Hearing*, 10.1097/AUD.0000000000000899
2. Pinkl, J., Cash, E. K., Hunter, L. L., Ferguson, S., Evans, T., Nejmen, T., Hamilton, J., Moore, D. R. & **Stewart, H. J.** (2020). Short-term pediatric acclimatization to adaptive hearing aid technology. *American Journal of Audiology*, 1-17.
3. **Stewart, H. J.**, Martinez, J., Perdew, A., Green, C. S., & Moore, D. R. (2020) Auditory cognition and perception of action video game players. *Scientific Reports*, 10, 14410.
4. **Stewart, H. J.**, Shen, D., Sham, N., & Alain, C. (2020) Involuntary orienting and conflict resolution during auditory attention: The role of ventral and dorsal streams. *Journal of Cognitive Neuroscience*, 10.1162/jocn_a_01594.
5. Moore, D. R., Hugdahl, K., **Stewart, H. J.**, Vannest, J., Perdew, A. J., Sloat, N. T., Hunter, L. L. (2020). Listening difficulties in children: Behavior and brain activation produced by dichotic listening of CV syllables. *Frontiers in Psychology*, 11.
6. **Stewart, H. J.**, Amitay, S., & Alain, C. (2017). Neural correlates of distraction and conflict resolution for nonverbal auditory events. *Scientific Reports*, 7: 1595.
7. **Stewart, H. J.**, & Amitay, S. (2015). Modality-specificity of selective attention networks. *Frontiers in psychology*, 6: 1826.
8. Maidment, D. W., Kang, H. J., **Stewart, H. J.**, & Amitay, S. (2014). Audiovisual integration in children listening to spectrally degraded speech. *Journal of Speech, Language, and Hearing Research*, 58, 61-68.
9. **Stewart, H. J.**, & Amitay, S. Development of auditory attention: Distractibility and conflict resolution. In *LSCD 2014: Workshop on Late Stages in Speech and Communication Development* (116-118).
10. **Stewart, H. J.**, McIntosh, R., & Williams, J. H. G. (2013). A Specific Deficit of Imitation in Autism Spectrum Disorder. *Autism Research*, 6, 522-530.

Under review

1. **Stewart, H. J.**, Cash, E. K., Hunter, L. L., Maloney, T., Vannest, J., & Moore, D. R. (medRxiv). Speech cortical activation and connectivity in typically developing children and those with listening difficulties. <https://doi.org/10.1101/2020.10.26.20218495>

- Petley, L., Hunter, L. L., Motlagh Zadeh, L., **Stewart, H. J.**, Sloat, N. T., Perdew, A., Lin, L., & Moore, D. R. (Under review). Listening difficulties in children with normal audiograms: relation to hearing and cognition.

In preparation

- Stewart, H. J.**, Cash, E. K., Hunter, L. L., Tamm, L., Becker, S., Werner, T., Vannest, J., & Moore, D. R. (In prep., Science). Auditory cortical networks in children with listening and attention disorders.
- Stewart, H. J.**, Cash, E. K., Pinkl, J. T., Ferguson, S., Martinez, J., Vannest, J., & Moore, D. R. (In prep., Human Brain Mapping). The listening brain: Children with mild to moderate hearing loss.
- Cash, E. K., Pinkl, J. T., Ferguson, S., Vannest, J., Moore, D. R., & **Stewart, H. J.** (In prep, PLOS One). Artificial language learning in elementary children with listening and hearing impairments.
- Stewart, H. J.**, Cash, E. K., Pinkl, J. T., Hunter, L. L., & Moore, D. R. (In prep, Trends in Hearing). Adaptive hearing aid benefit in children with mild/moderate hearing loss: A registered, double-blind, randomized clinical trial.
- Stewart, H. J.** (In prep, PLOS One). Auditory perceptual load and fusing of auditory features in children.

Professional activities

Talks (6 of 8)

- Stewart, H. J.** (2020, invited talk). *Speech and sound cortical connectivity in children with listening and attention disorders*. University of Potsdam, Germany
- Stewart, H. J.** (2020, invited talk). *Sound and speech cortical activation and connectivity in children with listening difficulties*. University College London, UK.
- Stewart, H. J.** (2018, invited talk). *Assessing how the developing brain listens*. University of Cincinnati, USA.
- Stewart, H. J.**, Martinez, J., Perdew, A., Green, C. S., Moore & D. R. (2018, invited talk). *Training auditory cognition and perception with 'traditional' video games*. Workshop on Realistic Sensation Technology (WORST) Symposium, Boston, USA.
- Stewart, H. J.**, Perdew, A., Martinez, J., Green, C. S., Moore & D. R. (2018). *Video game players' auditory cognition and perception*. Association for Research in Otolaryngology, San Diego, USA.
- Stewart, H. J.**, Amitay, S., & Alain, C. (2015). *The Test of Attention in Listening (TAIL): An event-related potential study*. CHSCOM, Linköping, Sweden.
- Stewart, H. J.**, McIntosh, R., & Williams, J. H. G. (2012). *Objective Measures of Imitation and Movement End-Point Re-Enactment in Autism*. International Meeting for Autism Research, Toronto, Canada.

Posters (14 of 28)

- Stewart, H. J.**, Cash, E., K., Pinkl, J., Vannest, J., & Moore, D. R. (2021). *Statistical word learning: Elementary children with listening or hearing impairment*. American Auditory Society, virtual.
- Stewart, H. J.**, Pinkl, J., Cash, E. K., Dept. of Audiology, Hunter, L. L., & Moore, D. R. (2021). *Double-blind randomized clinical trial of children learning to use hearing aids*. American Auditory Society, virtual.
- Stewart, H. J.**, Cash, E. K., Pinkl, J., Vannest, J., & Moore, D. R. (2021). *Speech listening and cortical plasticity in children using hearing aids*. Association for Research in Otolaryngology, virtual.
- Stewart, H. J.**, Holland, S. K., Maloney, T., Sloat, N., Perdew, A., Hunter, L. L., Vannest, J., & Moore, D. R. (2018). *Speech processing and functional connectivity in children with and without listening difficulties*. Association for Research in Otolaryngology, San Diego, USA.
- Stewart, H. J.**, Leiken, K., Holland, S. K., Maloney, T., Sloat, N., Perdew, A., Hunter, L. L., Vannest, J., Moore, D. R. (2017). *Speech and non-speech cortical activation in children with listening difficulties using fMRI*. Auditory Cortex, Banff, Canada.

6. **Stewart, H. J.**, Perdew, A., Martinez, J., Vamosi, B., Giglia, E., Green, C. S., & Moore, D. R. (2017). *Effects of video games on auditory cognition & perception*. Engaged Learning Network, Games for Change, New York City, USA.
7. **Stewart, H. J.**, Barry, J. G., Akeroyd, M. A., & Amitay, S. (2017). *Selective attention difficulties in school-aged children with listening difficulties*. CHSCOM, Linköping, Sweden.
8. **Stewart, H. J.**, Barry, J. G., Akeroyd, M. A., & Amitay, S. (2017). *Selective attention and listening difficulties in noisy environments*. Symposium on Research in Child Language Disorders (SRCLD), University of Wisconsin-Madison, USA.
9. **Stewart, H. J.**, Barry, J. G., & Amitay, S. (2016). *Selective attention and Auditory Processing Disorder*. British Society of Audiology (BSA), Coventry, England.
10. **Stewart, H. J.**, Amitay, S., & Alain, C. (2015). *Test of Attention in Listening (TAiL): An ERP study*. BRAMS, Montreal, Canada.
11. **Stewart, H. J.**, Kang, H. J., Barry, J., Amitay, S. (2015). *The Test of Attention in Listening (TAiL): Development of Auditory Attention*. CHSCOM, Linköping, Sweden.
12. **Stewart, H. J.**, Amitay, S., & Alain, C. (2015). *Test of Attention in Listening (TAiL): An ERP study*. CNS, San Francisco, USA.
13. **Stewart, H. J.**, & Amitay, S. (2014). *Development of auditory attention: Distractibility and conflict resolution*. Late Stages in Speech and Communication Development 2014, UCL, England.
14. **Stewart, H. J.**, & Amitay, S. (2013). *How the Test of Attention in Listening (TAiL) relates to other tests of attention*. British Society of Audiology (BSA), Keele University, England.

Developed tools

Virtual reality speech in noise

In progress

A computer game to present speech in noise assessments in a virtual reality environment. Currently on Oculus Rift and Go. Suitable from age 8.

Paediatric Task Load Index

In progress

A tablet delivered questionnaire to measure perceived mental workload in children, based on the NASA-TLX. Suitable for children from age 6.

Test of Attention in Listening (TAiL)

University of Nottingham

A computer game to assess auditory selective attention. Suitable for children from age 4, and adults. <http://doi.org/10.17639/nott.370>

2018

Reviewer

Grants

RNID flexi grant review panel

2021 - present

Journals

Ear and Hearing; Frontiers in Psychology; Journal of Speech, Language, and Hearing Research; PLOS One; Scientific Reports; Trends in Hearing Loss

Professional membership

Cognition and Communication Consortium

2020 - present

American Auditory Society

2020 - present

Association for Research in Otolaryngology

2018 - present

National Postdoc Association

2017 - 2018

Administration

Athena Swan

I was one of the founding members of our group and collected data from staff for our first application to the scheme.

MRC Institute of Hearing Research

April 2014 – Dec 2016

Disability Officer

I worked to support, represent and raise awareness of the disabled community at campus.

Aberdeen University Students Association

Sept 2008 – June 2010

Public engagement

Director, Science Club

Teaching science in a non-traditional way. We grew from an after-school club to be part of the 3rd and 4th grade curriculums.

Cincinnati Children's Hospital

April 2017 – Jan 2019

Press

1. Stewart, H. J. (August 2018). Scientifically Speaking. AoHL magazine.
2. Cincinnati Children's Community Relations (March 2018). Science Club. <http://bit.ly/CCHscienceClub>
3. WCPO Cincinnati news (November 2017). Science Club. <http://bit.ly/WCPOscienceClub>