

CURRICULUM VITAE
Nelson Cowan

12 May, 2025

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Current Position: Curators' Distinguished Professor, University of Missouri, Columbia

Research Specializations:

1. *Short-term or working memory*, including sensory and abstract components
2. *Childhood development* of short-term or working memory
3. Relations between *working memory and selective attention* in information processing

Research Summary

My broad interests are in human consciousness (e.g., Cowan et al., 2025, *Psychological Review*, “Theories of consciousness from the perspective of an embedded processes view” and in associated cognitive processes (e.g., Cowan et al., 2024, *Annual Review of Psychology*, “The relation between attention and memory”) and their childhood development (e.g., Cowan, 2022, *Cognition*, “Working memory development: A 50-year assessment of research and underlying theories;” Superbia-Guimarães & Cowan, 2023, *Developmental Review*, “Disentangling processing and storage accounts of working memory development in childhood.” As these summaries show, the work has led to the *embedded-processes model* of working memory. In it, there is a temporarily-activated portion of the memory system, including rapid new learning, and a subset of the activated information that is in a capacity-limited focus of attention allowing the formation of new associations between concurrently-held chunks of information.

For many years, the field of working memory emphasized decay and mnemonic processing speeds as the basic limits on performance. I helped shift the field to revive an interest in capacity limits, but with new care to distinguish between a core limit of 3-4 items and additional items retained using mnemonic strategies (e.g., Cowan, 2001, *Behavioral and Brain Sciences* & 2012, *Psychological Review*). Childhood developmental work funded by NIH showed that there are separate retrieval and rehearsal speeds related to memory span (Cowan et al., *Journal of Experimental Psychology, General*, 1998), but training children to speed up did not improve their span (Cowan et al., *Psychological Science*, 2006). Developmental increases in capacity were found to occur in the elementary school years even under conditions in which rehearsal and

refreshing of items during their presentation are prevented. Such conditions, for example, include those in which spoken lists of digits were unattended during their presentation until an occasional post-list recall cue (e.g., Cowan et al., *Child Development*, 1999), and retention of series of non-musical tones that are difficult to rehearse (Clark et al., *Developmental Psychology*, 2018). Our subsequent research has shown that working memory capacity increased in the elementary school years even after we experimentally equated the contributions of knowledge, filtering out of irrelevant items, encoding speed, and rehearsal (for a review, see Cowan, 2016, *Perspectives on Psychological Science*). Our recent research shows which control processes contribute to the developmental change in capacity. These appear to include children's growing ability to off-load one set of items to memory, in order to free up attention to encode another set (Cowan et al., 2018, *Developmental Science*); to share attention between storage and processing, rather than cease refreshing the stored information (Cowan et al., 2021, *Developmental Psychology*); and to become aware of their own capacity limits, gaining meta-working memory knowledge (Forsberg et al., 2021, *Developmental Psychology*). Our recent research also shows that the sharing of attention between multiple common objects in an array predicts degraded long-term recognition of the objects (Forsberg et al., *Psychonomic Bulletin & Review*, 2021). Our findings also indicate that, although working memory increases across childhood and diminishes in the elderly, the working- to long-term memory ratio of the information remains constant across ages; working memory capability predicts long-term learning (Forsberg et al., *Developmental Science*, 2022, two articles). I have pursued various practical collaborations applying our theoretical understanding of working memory to language impairment, dyslexia, Williams and Down Syndromes, challenges of bilingualism, attention in autism, psychometric testing, alcohol intoxication, and dense amnesia due to dementia, stroke, or accidents.

Teaching Specializations:

Cognition, Memory, Perception, Information Processing, and Cognitive Development

Biography: Born March 7, 1951, Washington, D.C. Married, 1 child, 2 stepchildren

Education:

Ph.D. 1980, University of Wisconsin, Madison (Psychology)

M.S. 1977, University of Wisconsin, Madison (Psychology)

B.S. 1973, University of Michigan, Ann Arbor (Independent Major, Neurosciences)

Doctoral Thesis: Toward an understanding of morphological segmentation in unfamiliar languages. *Dissertation Abstracts International*, 42, 398-B. Advisor: Philip A. Morse.

Professional Positions:

Current Position: Curators' Distinguished Professor, University of Missouri, Department of Psychological Sciences

2017 Senior Beckman Fellow, University of Illinois (summer)

2016 Taught 23rd International Summer School in Cognitive Science, Sofia, Bulgaria

2013-16 Professorial Fellow (20% senior position), University of Edinburgh, UK

2008-11 Director, Brain Imaging Center, Department of Psychological Sciences, MU

2005-07 Director, Cognition & Neuroscience Training Area, Dept. of Psychological Sciences

1995-2000: Middlebush Professor of the Social Sciences, University of Missouri (honorific title to 1 professor every 5 years on the basis of research and teaching)

- accomplishments.)
- 1994- Professor, Department of Psychology, University of Missouri
- 2003: Visiting research scientist, Institute for Psychology, Budapest, Hungary
- 2000: Benjamin Meaker Visiting Professor, Institute for Advanced Studies, University of Bristol, United Kingdom.
- 1999: Distinguished Visitor, University of Western Australia
- 1999: Visiting research scientist, University of Leipzig, Germany
- 1994-96: Director, Experimental Training Area, Dept. of Psychology
- 1991: Visiting Research Scientist (March through May), Psychology Department, University of Helsinki, Finland (Collaboration with Risto Näätänen)
- 1989-94: Associate Professor, Dept. of Psychology, University of Missouri
- 1985-89: Assistant Professor, Psychology Department, University of Missouri
- 1982-85: Assistant Professor, Psychology Department, University of Massachusetts at Amherst
- 1981-82: Postdoctoral Fellow, Psychology Department, New York University
Sponsor: Martin D.S. Braine

Keynote Addresses

- Psychonomic Society, New York, 2024*
- Empirical Studies in Psychology, Belgrade, Serbia, 2024*
- Max Planck School of Cognition, Cognition Academy, Dresden, Germany, 2022*
- Association for Research on Memory, Attention, Decision-Making, Intelligence, Learning, Language, and Organization (ARMADILLO), San Antonio, TX, 2019*
- Cognitive Psychology Section and Developmental Psychology Section Joint Conference, British Psychological Society, Stoke on Trent, UK, 2019*
- Conference on Working Memory, NYU Abu Dhabi, United Arab Emirates, 2017*
- Twenty-fifth International Symposium on Attention and Performance (Attention and Performance XXV). Saint-Hippolyte, Canada, 2013*
- Beyond the retention of list sequences. A workshop focusing on links between long-term memory and immediate memory. Lancaster, UK, 2008*
- Second European Working Memory Symposium (EWOMS-2), Dijon, France, 2004*
- Mathematics, Statistics, and Computing Section of the British Psychological Society, London, UK, 2000*
- Cognitive Psychology Section of the British Psychological Society, Essex, England, UK, 2000*

See also Invited Lectures and Symposia

Honors and Awards:

- Red Chalk Award for Fall, 2023. (Outstanding Research Faculty Mentor)
- Lifetime Achievement Award, American Psychological Association, Division 3, Society for Experimental Psychology and Cognitive Science, 2020
- Editor's Choice Award (with Dominic Guitard), *Journal of Experimental Psychology: Human Perception and Performance*, 2023.
- Senior author with Alicia Forsberg (first author), *Developmental Science* Early Career Researcher Prize, 2021.
- Doctor Honoris Causa (honorary doctorate), Université de Liège, Belgium, to be conferred 28 March, 2015.
- Fellow, AAAS, 2012
- Named one of "18 sensational psychology professors in Missouri" by StateStats.org, 2013
- President's Faculty Award for Sustained Excellence, University of Missouri System, 2011

Charter Fellow, Midwestern Psychological Association, 2009
Fellow, Society of Experimental Psychologists, Elected 2007
Curators' Distinguished Professor, University of Missouri. Appointment beginning Sept., 2004.
Doctor of Philosophy honoris causa (honorary doctorate), University of Helsinki (Nov. 22, 2002; conferred June 6, 2003)
Charter Fellow, Association for Psychological Science, 1998 (formerly the American Psychological Society)
Fellow, American Psychological Association, 1999
Fellow, American Psychological Association, Division 3 (Experimental Psychology), 1998
Chancellor's Award for Outstanding Faculty Research and Creative Activity in the Behavioral and Social Sciences, University of Missouri (1998)
Middlebush Professor of the Social Sciences, University of Missouri (1995-)
(Awarded to 1 professor at MU every 5 years, for research and teaching quality) (above)
Golden Chalk Award, for graduate teaching and education, University of Missouri (1999)
Editor's Award (with R. Gillam & J. Marler), American Speech, Language, and Hearing Association, for Gillam et al. (1998, *Journal of Speech, Language, and Hearing Research*)
Distinguished visiting professorships, Univ. of Bristol and Univ. of Western Australia (above)
New Investigator Research Award (1984)
Phi Kappa Phi Honor Society, University of Wisconsin Chapter
Sigma Xi, The Scientific Research Society
Sloan Scholar, University of Michigan, 1969-1973

Editorial and Professional Activities:

Editor, *Journal of Experimental Psychology: General*, 2017-2021 (outgoing year 2022)
President, American Psychological Association, Division 3 (Experimental Psychology), August 2008-09
Chair, External Review Committee, Department of Psychology, Iowa State University, 2013
Liaison from the Psychonomic Society to the U.S. National Committee for Psychological Science, 2012
Elected member of the Governing Board, Psychonomic Society, 2006-2011
(Duties included Chair, International Committee; Chair, Editor Selection committee, *Memory & Cognition*; Publications Committee member; Audit Committee member; Program Committee member)
Editor-in-Chief (with co-editor David A. Balota) of book series, *Frontiers in Cognitive Psychology*, Psychology Press
Guest Editor (with Robert Logie), 2014, *Memory & Cognition*, special issue on working memory
Guest Editor (with Ilke Öztekin), 2013, *Frontiers in Human Neuroscience*, Special issue: Representational states in memory: Where do we stand?
Associate Editor, *European Journal of Cognitive Psychology*, 2005 – 2007
Associate Editor, *Quarterly Journal of Experimental Psychology (A)*, 2001 - 2004
Associate Editor, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 1995-1999
Section Editor (Experimental Psychology), UNESCO, *Encyclopedia of Life-Support Systems*
Elected Member at Large, Executive Committee of Division 3 of the American Psychological Association (2004-2007)
Program Committee, Chair of Cognitive Section, Midwestern Psychological Association, 1998 - 2000

Program Committee, Chair of Cognitive Section, American Psychological Society, 1999 - 2001

Program Committee, Chair of Division 3 (Experimental), American Psychological Association, 2003 Meeting

Scientific Program Committee Member for the Second International Conference on Working Memory (ICWM-2), Kyoto, Japan, 2004.

Editorial Board Member (sometimes called Consulting Editor) for the following journals:

Cognition, 2025-

Psychological Science, 2011-

Journal of Experimental Psychology: General, 2009-11

Journal of Experimental Child Psychology, 1999 -2013

Cognitive Development, 2000 -

Interpreting, 2000 -

Psychological Research, 1998 -

Psyche (a web journal), 1998 -

Journal of Experimental Psychology: Learning, Memory, & Cognition, 1993 - 1994

Psychonomic Bulletin & Review, 1993 – 1994 and 2003 -

Memory & Cognition, 2002 –

Canadian Journal of Experimental Psychology, 2005 – 2008

Seminars in Brain and Consciousness, 2009-

Journal of Memory and Language, 2012-

Scientific Advisory Committee Member for NIH center grant, Albert Einstein College of Medicine, "Clinical research center for communicative disorders," 1997 -

Consultant on grants by Daniel C. Javitt, David B. Pisoni, Wei Ji Ma, Priti Shah, Bruce Bartholow, Shelley Gray.

Grant reviewing:

Co-chair, CSR, F12A Special Emphasis Panel for Fellowships in Cognition, Language, and Perception, March, 2011. Chair of special review CSR R21 applications (2013).

Guest reviewer for NIH (1998, NIDCD, Communication Sciences), NIMH (Cognition, Emotion, & Personality Study Section); ad hoc grant reviewer for NSF, NIMH, The Air Force Office of Scientific Research, and the James S. McDonnell Foundation. NIH BBBP-4 Study Section guest reviewer (February, 2002). NIH Special Emphasis Panel, Scientific Review Group; CSR, Cognition, Language and Perception Fellowship Study Section (Pre- and Postdoctoral Applications, numerous times 2006-present). Have served as a reviewer for British, Australian, and European granting agencies also.

Consultant on the revision of the Wechsler Preschool and Primary Scale of Intelligence, Version IV (WPPSI-IV), Pearson, 2010-2012

Consultant, Defense Language Institute, Foreign Language Center, Monterey, CA, 2011

Advisory board, *Journal of Learning, Development, Community*, 2015

Extramural Grant Awards:

Current extramural funding:

Cowan, N., PI. 2 R01 HD021338-30 through -34. Competing continuation, *Mechanisms of working memory capacity limits and their development*. NICHD, 5/08/2019 – 4/30/2025. Total costs, \$2,367,039. (This is the same project that began in 1984 as a New Investigator Research Award.)

Cowan, N., PI of subcontract. Gray, S., PI. NIDCD, Profiles of Working Memory for Educational Research, Funded by AZ ST UNIV July 1, 2018 - June 30, 2024.

Cowan, N., Mentor. For Kundu, Bornali, PI., Neurosurgeon Research Career Development Program (NRCDP). NINDS, 1/1/2024-12/30/2026.

Cowan, N., Co-I. NSF Bio 0039720. REU Site: Summer Research Projects in Neuroscience. National Science Foundation, 1/15/2021-12/31/2023. (Funded summer research experiences for undergraduates from other universities.) PI: Satish S. Nair, University of Missouri.

Lavers, R., & Cowan, N. (2024). *Blue, Left, Ampersand, Diamond: The Development of Memory for Mixed and Homogenous Object Series*. Spring Undergraduate Research Grant, Psi Chi.

Prior extramural funding:

Prior R01 Awards

Cowan, N., PI. R01 HD021338. Competing continuation, *Mechanisms of working memory capacity limits and their development*. NICHD, 08/01/2012-07/31/2017. (Followed by no-cost extension 1 year)

Cowan, N., PI. R01 HD021338. Competing continuation, *Working memory, attention, and time: Childhood development and adult function*. NICHD, 4/01/07 -7/31/2012.

Cowan, N., P.I. NIH R01 Award, NICHD, 2 R01 HD21338. Competing continuation, *The development of short-term memory for speech attributes..* 7/1/01 - 6/30/06.

Cowan, N., P.I., NIH R01 Award (NICHD, R01 HD21338, Competing continuation, *The development of short-term memory for speech attributes.*). 8/1/96-7/31/2000.

Cowan, N., P.I., NIH R01 Award (Competing continuation, NICHD, HD21338, *The development of memory for speech.*): 7/6/92-7/31/96.

Cowan, N., P.I., NIH R01 Award, 4/1/88-3/31/92, NICHD, HD21338, *The development of memory for speech.*

Cowan, N., P.I., NIH *New Investigator Research Award*, 6/01/84-5/31/87, *Memory for speech in preschool children.*

Cowan, N., Co-I. 1 R01 DC010784-01A1, *Working Memory and Word Learning in Children with Typical Development and Language Impairment*. NIDCD, 1-1-2011 - 12-31-2015.

Direct, \$1,993,933; Total project costs, \$2,992,823. PI: Shelley Gray, Arizona State University

Cowan, N., Co-I. (Cowan PI for MU subcontract) 2 R01 DC010784-06. *Profiles of Working Memory for Educational Research*. NIDCD, 7/01/2018 – 6/30/2023. PI: Shelley Gray, Arizona State University.

Other Prior Extramural Awards

Logie, R.L., PI. (with V. Camos, P. Barrouillet, N. Cowan, and M. Naveh-Benjamin, co-PIs). Working memory across the adult lifespan: An adversarial collaboration. Economic and Social Research Council (ESRC, Grant # ES/N010728/1), United Kingdom. 3/1/2016-2/29/2020. ~1.1 million UK pounds, details soon to be determined. Funds several postdoctoral fellows including one in Missouri, participant payment costs, and travel funds for several yearly meetings of the group.

Cowan, N., Co-I. NSF Bio 0039720. REU Site: Summer Research Projects in Neuroscience. National Science Foundation, 8/28/2013-3/31/2020. (Funded summer research experiences for undergraduates from other universities.) PI: Satish S. Nair, University of Missouri.

Cowan, N., Co-PI. 2P60 AA011998-11, *Multi-disciplinary Alcoholism Research Center Grant, Project 8, Alcohol Effects on Executive Cognitive Function: Specifying Component Processes*. National Institute on Alcohol Abuse and Alcoholism. Total direct costs

- (Project 8): \$1,190,447; total project costs: \$1,779,718. 6/01/09 – 05/30/14. Bruce Bartholow, PI for Project 8 (Center PI: Andrew Heath, Washington Univ.)
- Ricker, T.J., PI. 1F31MH094050-01. NIMH Predoctoral Fellowship (NRSA). *Behavioral and Electrophysiological Measures of Forgetting in Working Memory*. Faculty supervisor. 7/1/2011-6/30/2013
- Becker, T.M., PI. 1F31MH090670-01A1. NIMH Predoctoral Fellowship (NRSA). *Prefrontal Cortex Goal Maintenance and Language Production in Schizophrenia*. Co-sponsor. 2010-2011.
- Morey, C.C., PI. 1 F31 MH074205-01A2. NIMH Predoctoral Fellowship (NRSA). *Domain-general storage in working memory*. Faculty Supervisor/Sponsor. 6/1/2006 – 8/31/2007.
- Cowan, N., P.I. (with co-PIs Scott Saults & Kenneth Sher). *Effects of acute alcohol intoxication on working-memory capacities of the focus of attention*. Alcoholic Beverage Medical Research Foundation, 6/1/03 – 5/31/05.
- Preceptor for Hagglund, K., P.I., *The Missouri rehabilitation research training program*. NIH, 7/1/00 - 6/30/05.
- Collaborator for Towse, J., P.I. (2003). *Response timing in children's working memory*. Economic and Social Research Council (ESRC), 11/6/03 – 11/5/04.
- Cowan, N. Benjamin Meaker Fellowship, University of Bristol, United Kingdom, 9/00 – 12/00.
- Associate Investigator: M.T. Maybery (Chief Investigator), D.M. Jones, & N. Cowan, *Working memory: Fundamental processes common to the verbal and spatial modalities?* Australian Research Council Grant, for 1999.
- Sponsor for Ron Gillam, NIH/CIDA Clinical Investigator Development Award, 7/1/91-6/30/96, *Modality specific memory mechanisms in SLI [specifically language-impaired] children*.
- Cowan, N. Postdoctoral Fellowship, NIMH, 1/22/81-9/1/82. *Memory factors in children's word order comprehension*. Sponsor: Martin D. S. Braine, New York University.
- Cowan, N. ARRA supplement, R01 HD-21338-23S1. 08/01/2010-07/31/2011. Direct, \$83,000; Total project costs, \$122,259.
- Cowan, N., Co-PI. 1 R40MC19926-01-00, *Predictors of effects of propranolol on language & connectivity in autism*. HRSA, 09-01-2010 08-31-2013. Direct, \$ 121,64; Total project costs, \$188,378. PI: David Beversdorf.
- Cowan, N., PI. *Effects of cognitive load on foreign word learning*. Center for the Advanced Study of Language. 6/1/2012 - 9/30/2012, direct costs \$68,613; total costs, \$103,948. 11/5/2012 - 9/30/2013, total costs, \$173,000.
- Logie, R., Camos, V., Cowan, N., & Saito, S. *Advancing cognition through co-operative adversarial collaboration: A paradigm shift?* Psychonomic Society Leading Edge Workshop for 2020, delayed until 2021.
- Curtis, A., PI. American Academy of Sleep Medicine, JI-19-9. Focused Project Award for Junior Investigators. *Effects of Computerized Cognitive Brain Training on Sleep, Arousal, and Daytime Functioning in Older Adults with Insomnia*. 01/01/2020-12/31/2020. Senior faculty mentors: C. McCrae & N. Cowan.
- Cowan, N., Co-I. NSF DBI 1950787 REU Site: Summer Research Projects in Neuroscience. National Science Foundation, 01/15/2021-12/31/2023. (Funded summer research experiences for undergraduates from other universities.) PI: Satish S. Nair, University of Missouri.
- Curtis, A., PI. TRIUMPH Award, School of Medicine, University of Missouri. *Cognitive Training in Mild Cognitive Impairment: Effects on Sleep, Cognition, and Arousal*. 05/01/2021-04/30/2023. Senior faculty mentors: C. McCrae & N. Cowan

Books:

- Logie, R.H., Wen, Z., Gathercole, S., Cowan, N., & Engle, R. (Eds.) (2023), *Memory in Science for Society: There is nothing as practical as a good theory*. Oxford University Press.
- Courage, M.L., & Cowan, N. (eds) (2022). *The development of memory in infancy and childhood*. 2nd Edition. Routledge.
- Logie, R.H., Camos, V., & Cowan, N. (eds) (2021). *Working Memory: State of the Science*, Oxford University Press.
- Cowan, N. (2016). *Working memory capacity*. Psychology Press and Routledge Classic Edition. New York: Routledge. [Original edition 2005. New *Foreword to the Classic Edition*.]
- Courage, M.L., & Cowan, N. (eds.) (2009). *The development of memory in infancy and childhood*. Hove, U.K.: Psychology Press.
- Cowan, N. (2005). *Working memory capacity*. Hove, East Sussex, UK: Psychology Press. [Psychology Press and Routledge Classic Edition with new foreword, 2016]
- Cowan, N. (ed.) (1997). *The development of memory in childhood*. Hove, East Sussex, UK: Psychology Press. (Paperback edition: 1997)
- Cowan, N. (1995). *Attention and memory: An integrated framework*. Oxford Psychology Series, No. 26. New York: Oxford University Press. (Paperback edition: 1997)

Journal Articles (311) and Book Chapters (70), approximate reverse chronological order:

381. Sfeir, N., & Cowan, N. (in press). Working memory and language. In H. Nesi & P. Milin (Eds.-in-Chief), *International Encyclopedia of Language and Linguistics*, 3rd Edition. Elsevier.
380. Forsberg, A, Belletier, C., Graham, A., Rhodes, S., Barrouillet, P., Camos, V., Cowan, N., Naveh-Benjamin, M., & Logie, R. (in press). Different measures of working memory decline at different rates across adult ageing, and dual task costs plateau in mid life. *Quarterly Journal of Experimental Psychology*.
379. Bao, C., Li, Y., & Cowan, N. (in press). Object- and feature-based working memory limits for pairs of complex objects and their development during the school years. *Cognition*.
378. Gaspelin, N., & Cowan, N. (in press). Restoring a top-down control assumption: salience effects in working memory are overcome with time. *Journal of Experimental Psychology: General*.
377. Cowan, N., & Guitard, D. (2025). Similar working memory outcomes with successive

- versus concurrent presentation of tones and colors. *Attention, Perception & Psychophysics*, 87, 884–898. <https://doi.org/10.3758/s13414-025-03036-3>
376. Delooze, M.A., Guitard, D., Cowan, N., & Morey, C.C. (2024). Rapid source forgetting across modalities: A problem for working memory models. *Memory & Cognition*. <https://doi.org/10.3758/s13421-024-01664-y>
375. Forsberg, A., Guitard, D., Greene, N.R., Naveh-Benjamin, M., & Cowan, N. (in press). Differential information transfer and loss between working memory and long-term memory across serial positions. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. <https://doi.org/10.1037/xlm0001437>
374. Cissne, M.N., Bellesheim, K.R., Cowan, N., & Christ, S.E. (in press). Visual working memory in adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*.
373. Cowan, N. (2024). Working Memory: The information you are now thinking of. In J.H. Byrne (ed.), *Learning and memory: A comprehensive reference* (third edition). Academic Press. <https://doi.org/10.1016/B978-0-443-15754-7.00029-8>
372. Morey, C.C., AuBuchon, A.M., Attwood, M., Castelain, T., Cowan, N., Crepaldi, D., Fjordingstad, E., Fredriksen, E., Jarrold, C., Koch, C., Lelonkiewicz, J.R., Lupyan, G., Mendenhall, W., Moreau, D. Schonberg, C., Tamnes, C.K., Vlach, H., & Elliott, E.M. (2024). Is verbal rehearsal strategic? An investigation into overt rehearsal of nameable pictures in 5- to 10-year-old children. *Journal of Cognition and Development*. : <https://doi.org/10.1080/15248372.2024.2389123>
371. Cowan, N., Ahmed, N.I., Bao, C., Cissne, M.N., Flores, R.D., Gutierrez, R.M., Hayse, B., Musich, M.L., Nourbakhshi, H., Nuraini, N., Schroeder, E.E., Sfeir, N., Sparrow, E., & Superbia-Guimarães, L. (2025). Theories of consciousness from the perspective of an embedded processes view. *Psychological Review*, 132(1), 76-106. <https://doi.org/10.1037/rev0000510>
370. Cowan, N., & Guitard, D. (2024). Encoding colors and tones into working memory concurrently: A developmental investigation. *Developmental Science*, e13552. <https://doi.org/10.1111/desc.13552>
369. Alt, M., Hunter, D., Levy, R. Neiling, S.L., Leon, K., Arizmendi, G., Cowan, N., & Gray, S. (2025). Working memory structure in young Spanish-English bilingual children. *Bilingualism: Language and Cognition*, 28, 469-483. <https://doi.org/10.1017/S1366728924000580>
368. Greene, N.R., Guitard, D., Forsberg, A., Cowan, N., & Naveh-Benjamin, M. (in press). Working memory limitations constrain visual episodic long-term memory at both specific and gist levels of representation. *Memory & Cognition*.
367. Lawrence, C.O., Guitard, D., & Cowan, N. (2024). Short-term retention of words as a function of encoding depth. *Memory & Cognition*, 1338–1356. doi: 10.3758/s13421-024-01546-3
366. Sfeir, N., Guitard, D., & Cowan, N. (2024, online ahead of print). Short- and long-term influences of repeated speech examples on segmentation in an unfamiliar language analog.

Memory & Cognition. doi: 10.3758/s13421-024-01517-8

365. Greene, N., Forsberg, A., Guitard, G., Naveh-Benjamin, M., & Cowan, N. (2024). A lifespan study of the confidence-accuracy relation in working memory and episodic long-term memory. *Journal of Experimental Psychology: General*, *153*, 1336–1360. <https://doi.org/10.1037/xge0001551>
364. Cowan, N. (2024). To Reduce Editor Bias and Increase Diversity and Transparency, Editors Must be Motivated: Comment on Sharpe (2024). *American Psychologist*, *79* (7), 893–895. <https://doi.org/10.1037/amp0001305>
363. Pannell, B., Guitard, G., Li, Y., & Cowan, N. (2023). Can synchronized tones facilitate immediate memory for printed lists? *Memory*, *31*, 1163-1175. doi: 10.1080/09658211.2023.2231672.
362. Superbia-Guimarães, L., & Cowan, N. (2023). Disentangling processing and storage accounts of working memory development in childhood. *Developmental Review*, *69*, 101089. <https://doi.org/10.1016/j.dr.2023.101089>
361. Cowan, N., Bao, C., Bishop-Chrzanowski, B.M., Costa, A.N., Greene, N.R., Guitard, D., Li, C., Musich, M.L., & Ünal, Z.E. (2024). The relation between attention and memory. *Annual Review of Psychology*, *75*, 183-214. <https://doi.org/10.1146/annurev-psych-040723-012736>
360. Forsberg, A., Guitard, D., Adams, E.J., Pattanakul, D., & Cowan, N. (2023). Working memory constrains long-term memory in children and adults: Memory for objects and bindings. *Journal of Intelligence*, *11*(5), 94. <https://doi.org/10.3390/jintelligence11050094> [Editor's Choice article]
359. Bao, C., & Cowan, N. (2023). Generalization of skill for a working memory recognition procedure in children: The benefit of starting with easy materials. *Journal of Intelligence*, *11*, 56. <https://doi.org/10.3390/jintelligence11030056> [Editor's Choice article]
358. Naveh-Benjamin, M. & Cowan, N. (2023). Age-related changes in working memory: Roles of attention, executive function, and knowledge. *Nature Reviews Psychology*, *2*, 151-165. <https://doi.org/10.1038/s44159-023-00149-0>. Viewable Link: <https://rdcu.be/c39GP>
357. Costa, A. N., Nowakowski, L. M., McCrae, C. S., Cowan, N., & Curtis, A. F. (2023). Discrepancies in Objective and Subjective Cognition in Middle-Aged and Older Adults: Does Personality Matter? *Gerontology and Geriatric Medicine*, *9*, 23337214221146663. <https://doi.org/10.1177/23337214221146663>
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1. Richardson, J. S., Cowan, N., Hartman, R., & Jacobowitz, D. M. (1974). On the behavioral and neurochemical actions of 6-hydroxydopa and 5, 6- dihydroxytryptamine in rats. *Research Communications in Chemical Pathology and Pharmacology*, 8, 29-44.

Other Published Work

Valle-Inclan, F., Lee, E.-Y., Li, D., Cowan, N., Ricker, T.J., and Hackley, S.A. (2013). Cortical thickness correlates of working memory capacity in healthy younger and older adults and in Parkinson's disease. *Psychophysiology* (supplement), 50, s57.

Cowan, N. (5 November, 2009). Disproving myself. *Psychology Today*, web log (listed as an Essential Read on the Psychology Today web site, 5 November 2009).

Invited Lectures and Symposia:

Cowan, N. (2024, November). Keynote address, Psychonomic Society Annual Meeting, New York.

Cowan, N. (2024, March). Keynote address, Empirical Studies in Psychology, Belgrade, Serbia. (Zoom

- presentation due to travel difficulties)
- Cowan, N. (2024, July). *Difficulty-insensitive Measures of Developmental Change in Working Memory*. Invited presentation at the International Conference on Working Memory, Leeds, UK.
- Gray, S., Alt, M., Levy, R., Hogan, T., & Cowan, N. (2024, July). *Structure and Growth of Working Memory in Young Children in the US*. Invited talk at the 4th International Conference on Working Memory 2024 (ICWM 24).
- Cowan, N. (2024, July). *Difficulty-insensitive Measures of Developmental Change in Working Memory*. Invited talk at the 4th International Conference on Working Memory 2024 (ICWM 24).
- Cowan, N. (2023, July). *What people do to free up attention: Grouping and off-loading from working memory*. Institute of Neuroscience of the University of Guadalajara, Mexico. Virtual presentation.
- Cowan, N. (2023, May). *Developmental Stability and Change in Allocating Attention in Working Memory*. Department of Psychology, University of Geneva, Switzerland.
- Cowan, N. (2023, May). *Developmental Stability and Change in Allocating Attention in Working Memory*. Department of Psychology, University of Sheffield, UK.
- Cowan, N. (2023, May). *Developmental Stability and Change in Allocating Attention in Working Memory*. Department of Psychology, University of Bristol, UK.
- Cowan, N. (2023, May). *Developmental Stability and Change in Allocating Attention in Working Memory*. Department of Psychology, Cardiff University, UK.
- Cowan, N. (2023, May). *How do people distribute attention in working memory tasks?* Neurocomputation and Neuroimaging Unit, Free University of Berlin.
- Cowan, N. (2023, March). *What people do to free up attention: Grouping and off-loading from working memory*. Department of Psychology, Washington University, St. Louis.
- Cowan, N. (2023, January). *Attention versus modularity and the war of the ghosts of theories*. Bartlett Lecture Symposium, Experimental Psychology Society, London, UK.
- Cowan, N. (2022, September). *Child development in the management of the focus of attention in a dual task*. European Society for Cognitive Psychology (ESCOP), Lille, France.
- Forsberg, A., Adams, E.J., & Cowan, N. (2022, September). *Why does Visual Working Memory Ability Improve with Age: More objects, more feature detail, or both?* European Society for Cognitive Psychology (ESCOP), Lille, France.
- Morey, C., Elliott, E., Aubuchon, A., Attwood, M., Castelain, T., Cowan, N., Fredriksen, E., Jarrold, C., Lupyan, G., Moreau, D., Schonberg, C., Tamnes, C., & Vlach, H. (2022, September). *Revisiting the development of verbal rehearsal across childhood*. European Society for Cognitive Psychology (ESCOP), Lille, France.
- Cowan, N. (2022, July). *Exploring how attention and working memory develop during the school years*. Max Planck School of Cognition, Cognition Academy, Dresden, Germany (Zoom presentation). Keynote address.
- Cowan, N. (2022, May). *Exploring how attention and working memory are used across the life span*. Engle Working Memory Lab, School of Psychology, Georgia Institute of Technology (Zoom presentation).
- Cowan, N. (2022, May). *Exploring how attention and working memory are used across the life span*. Department of Psychology, University of Sheffield, Sheffield, UK (Zoom presentation).
- Cowan, N. (2022, May). *Multiple Item Repetitions in Lists for Serial Recall*. Annual meeting of the society of Experimental Psychologists, Chicago.
- Cowan, N. (2022, March). Panelist for *Getting CB Papers into Management and Psychology Journals*. Society for Consumer Psychology online conference representing the *Journal of Experimental Psychology: General* as outgoing chief editor.
- Cowan, N. (2021, November). *Attending to Words and Objects and Remembering them in Order: How People Do This and How they May Differ*. Invited presentation to the Center for Cognitive Science, University of Kaiserslautern, Germany, online presentation.
- Cowan, N. (2021, November). *Embedded Processes and the Route from Working-Memory To Long-Term Memory*. In symposium by R.H. Logie (Chair), Advancing Cognition Through Adversarial Collaboration: The Case of Working and Long-Term Memory (Leading Edge Workshop). Psychonomic Society online presentation.
- Cowan, N. (2021, June). *An Embedded Processes View of How Working Memory Creates Long-Term Memories*. In D. Guitard (Chair), *The puzzling relationship between memory over the short and long-term*.

- Symposium conducted at the 30th annual meeting of the Canadian Society for Brain, Behaviour and Cognitive Science, Virtual meeting.
- Forsberg, A., Guitard, D., Adams, E. J., Greene, N., Pattanakul, D., Naveh-Benjamin, M., & Cowan, N. (2021, June). Working memory capacity is a key factor determining long-term memory across the lifespan. In D. Guitard (Chair), *The puzzling relationship between memory over the short and long-term*. Symposium conducted at the 30th annual meeting of the Canadian Society for Brain, Behaviour and Cognitive Science, Virtual meeting.
- Forsberg, A., Guitard, D., Adams, E.J., Greene, N., Pattanakul, D., Naveh-Benjamin, M., & Cowan, N. (2021, November). Developmental working memory limits across the human lifespan: Implications for long-term memory. In symposium by V. Loaiza, *The Information Exchange Between Working Memory and Long-Term Memory*. Psychonomic Society online presentation.
- Cowan, N. (2020, February). *Working memory capacity in cognition, brain function, and human development*. Address to the Department of Psychology, University of Cyprus, Nicosia, Cyprus.
- Cowan, N. (2019, November). Department of Psychological Sciences, University of Missouri. *Too Much Confidence in Too Little Knowledge: Exemplifying How Awareness of our Limits Might Improve our Lives*. Distinguished Lecture Series.
- Cowan, N. (2019, October). *Working memory in the mind and brain, child development, and adult cognitive limitations*. Keynote address. Association for Research on Memory, Attention, Decision-Making, Intelligence, Learning, Language, and Organization (ARMADILLO), San Antonio, TX.
- Cowan, N. (2019, October). *Recognizing important speech under difficult attention conditions*. Northwestern University, Knowles Hearing Center, Evanston, IL
- Cowan, N. (2019, September). *Working memory capacity examined from three perspectives: Cognition, neuroimaging, and child development*. Keynote address, Cognitive Psychology Section and Developmental Psychology Section Joint Conference (CogDev2019), British Psychological Society, Stoke on Trent, UK.
- Cowan, N. (2019, August). *Working memory capacity examined from three perspectives: Cognition, neuroimaging, and child development*. Neurology grand rounds, University of Missouri
- Cowan, N. (2019, July). *Working memory in the mind and brain, child development, and adult cognitive limitations*. International Colloquia Series, School of Psychology, University of Cardiff, UK.
- Cowan, N. (2019, April). *Cognitive limitations of children, citizens, and scientists*. Presidential Invited Speaker, Midwestern Psychological Association, Chicago.
- Cowan, N. (2019, March). *Working memory capacity*. Invited public lecture, American Psychoanalytic Association, Kansas City, MO.
- Cowan, N. (2019, January). *The nature of human working memory*. IBM Distinguished Guest Lecture, IBM Research Almaden Forum Speaker Series, San Jose, CA.
- Alt, M., Gray, S., Green, S., Hogan, T., Petscher, Y., Fox, A., & Cowan, N. (2018, May). *Working memory profiles of children with dyslexia, developmental language disorder, and typical development*. Invited talk presented to the community at the University of Hong Kong, Hong Kong.
- Cowan, N. (2018, May). *Human Personal Identity and the Neuropsychology of Memory*. Invited presentation within a symposium at Fontbonne University, “The primary source: An interdisciplinary conference on memory and identity,” St. Louis, MO.
- Cowan, N., Rhodes, S., & Naveh-Benjamin, M. (2018, May). *How Can Attention Be Distinguished from Multiple Modules?* Presented within the symposium, “What Limits the Capacity of Working Memory? An ‘adversarial’ symposium.” Amsterdam, Netherlands.
- Cowan, N. (2018, April). *Working memory capacity: converging evidence from cognition, neuroimaging, and child development*. Invited public lecture at the University of Oxford, Oxford, UK.
- Cowan, N. (2018, April). *Working memory capacity examined with converging evidence from cognition, neuroimaging, and child development*. Invited public lecture at Zhejiang University, Hangzhou, China.
- Cowan, N. (2018, March). *Working memory capacity examined from three perspectives: Converging evidence from cognition, neuroimaging, and child development*. Invited talk presented to the Department of Psychology, University of Toronto, Mississauga, Canada.
- Cabbage, K.L., Hogan, T.P., Gray, S., Alt, M., Green, S., & Cowan, N. (2018, July). *Characterizing nonword repetition production error patterns in children with dyslexia*. In symposium led by K. Farquharson, entitled,

- “Exploring the relations between speech production and word reading in children with dyslexia, speech production deficits, or both.” Society for the Scientific Study of Reading Annual Convention, Brighton, United Kingdom.
- Alt, M., Gray, S., Green, S., Hogan, T., Petscher, Y., & Cowan, N. (2017, September). *Working memory profiles of children with dyslexia, language impairment, and typical development*. Invited talk presented as part of the Cognitive Science Colloquium Series, University of Arizona, Tucson, AZ.
- Cowan, N. (2017, August). *Me and My Shadow: The Conscious Mind, the Auxiliary Mind, How they Cooperate, and How they Grow*. Invited talk, Psychology Department, University of Illinois, Champaign, IL.
- Cowan, N. (2017, July). *Differences Between a Working Memory Model and a Modelling Framework*. Invited Presentation to Visual Working Memory Symposium, Munich.
- Cowan, N. (2017, June-July). Concluding discussion, with C. Morey. Symposium on *The Crossroads of Attention in Working Memory: Consolidation, Refreshing, & Removal*. Ovronnaz, Swiss Alps, Switzerland.
- Cowan, N. (2017, September). *Beyond everything going up with age: Unloading central attention*. In symposium, Working memory from childhood to adulthood: What influences memory performance? (Andria Shimi & Candice Morey). Biennial Meeting of the European Society for Cognitive Psychology (ESCAP), Potsdam, Germany.
- Cowan, N. (2017, September). *What is the meaning of memory decay?* In symposium, Mechanisms of forgetting in working memory (Alexander Soemer & Satoru Saito, Chairs). Biennial Meeting of the European Society for Cognitive Psychology (ESCAP), Potsdam, Germany.
- Cowan, N. (2017, March). *Childhood development of remembering two things at once*. Talk presented to the Society of Experimental Psychologists, Vanderbilt University, Nashville, TN.
- Cowan, N. (2017, March). *Me and My Shadow: The Conscious Mind, the Auxiliary Mind, How they Cooperate, and How they Grow*. Invited talk, Cognitive Science Program, Cornell University, Ithaca, NY.
- Cowan, N. (2017, February). *Me and My Shadow: The Conscious Mind, the Auxiliary Mind, How they Cooperate, and How they Grow*. Invited talk, Psychological Sciences, Texas Tech University, Lubbock, TX.
- Cowan, N. (2017, February). *The human experience of consciousness and a growing scientific understanding of how children and adults keep track of the environment*. Invited keynote address, Conference on Working Memory, NYU Abu Dhabi, United Arab Emirates.
- Cowan, N. (2016, May). Symposium discussant (substitute, not in program) for R.L. Logie, *Human and digital memory*. International Meeting of the Psychonomic Society, Granada, Spain.
- Cowan, N. (2016, May). Symposium discussant for S. Saito, *Domain-general and domain-specific serial order mechanisms in working memory*. International Meeting of the Psychonomic Society, Granada, Spain.
- Cowan, N. (2016, May). *Working memory capacity and auditory development*. Auditory development symposium, Boys Town National Research Hospital, Omaha.
- Cowan, N. (2016, March). *Working memory capacity, the brain, and childhood development*. Department of Psychology, University of California, Berkeley.
- Cowan, N. (2016, March). *Recognizing important speech under difficult attention conditions*. Starkey Hearing Research Center, Berkeley, CA.
- Cowan, N. (2015, October). *Working memory capacity and its development in children*. School of Behavioral & Brain Sciences, University of Texas, Dallas.
- Cowan, N. (2015, June). *Comparisons between memories and visual objects are not optimal*. Talk presented to the mini-meeting on foraging, Visual Attention Laboratory, Harvard Medical School, Boston, MA.
- Cowan, N. (2015, June). *Why Does Working Memory Capacity Increase With Childhood Development?* In symposium by V. Simmering, Chair, “Bringing together research using different approaches and age groups to understand the development of visuospatial working memory.” Symposium at the 45th annual meeting of the Jean Piaget Society, Toronto, Canada.
- Cowan, N. (2015, May). *How many items can you hold in mind at once, and how about a young child?* Annual Conference of the Doctoral School of Behavioral, Social, and Health Sciences, University of Tartu, Estonia.
- Cowan, N. (2015, May). *Evolution of my research career*. Psychology Institute, University of Tartu, Estonia.
- Cowan, N. (2015, March). *The human focus of attention and the childhood development of working memory*. Presentation at Université de Liège, Belgium.
- Cowan, N. (2015, February). *Development of working memory capacity: Alternative possible mechanisms*.

- Department of Psychology, University of Bristol, UK.
- Cowan, N. (2015, February). *How I spent my last 40 summer vacations: Products of a research program on working memory capacity*. Department of Psychology, University of Wisconsin, Madison.
- Cowan, N. (2015, March). *The role of general attention in working memory: cognitive and neuroimaging evidence*. Neuroscience Day, Department of Psychology, University of Edinburgh, UK.
- Cowan, N. (2015, September). *The focus of attention as a highlighter of perceived and of stored information*. Symposium Talk in symposium (M. Avraamides & M.T.B. Molina, organizers), "Attention and working memory: commonalities and differences." Biennial Meeting of the European Society for Cognitive Psychology (ESCOP), Cyprus.
- Cowan, N. (2015, March). *Why does working memory capacity increase with childhood development?* Oral presentation within the symposium (Chris Jarrold, Chair), "What is working memory, and how and why does it develop in children?" Biennial meeting of the Society for Research in Child Development (SRCD), Philadelphia.
- Vergauwe, E., & Cowan, N. (2015, March). *Attending to information in working memory: Exploring the process of refreshing through the probe-span task*. Oral presentation to be presented in symposium "Control of the contents of working memory" at the Inaugural International Convention of Psychological Science, Amsterdam, The Netherlands.
- Cowan, N. (2014, October). *How many things can you keep in mind, and how about a young child?* Discover Psychology Public Lecture Series, McMaster University, Hamilton, Ontario, CA.
- Cowan, N. (2014, July). *Working memory for the amount of change in an array*. Invited presentation at the International Conference on Working Memory (ICWM), Cambridge, UK.
- Cowan, N. (2014, July). Workshop on benchmarks of working memory, Emmetten, Switzerland.
- Cowan, N. (2014, January). *Exploring the contents of the human focus of attention*. Invited talk, Department of Psychology, University of Edinburgh.
- Cowan, N. (2013, September). *Unraveling the mystery of cognitive growth*. Invited presentation to the Department of Human Development and Family Studies, University of Missouri, Columbia.
- Cowan, N. (2013, August). *Unraveling the mystery of cognitive growth*. Invited presentation to the Developmental Training Committee seminar, University of Missouri, Columbia.
- Cowan, N. (2013, July). *Senses and memorability*. Symposium Lecture (keynote address), Twenty-fifth International Symposium on Attention and Performance (Attention and Performance XXV). Saint-Hippolyte, Canada.
- Cowan, N. (2013, July-August). *The role of attention in working memory for features and their binding into objects*. In invited symposium, N. Cowan & Y. Tang, The case for attention as a basis of working memory: Cognitive, psychometric, and neural factors. American Psychological Association annual convention, Honolulu, Hawaii.
- Cowan, N. (2013, May). *Attention and working memory for features and objects*. In "(top-)Models of Working Memory," a symposium chaired by Valérie Camos. Annual meeting of the Association for Psychological Science, Washington, D.C.
- Cowan, N. (2013, April). *Developments in the embedded-process model of working memory*. Invited talk presented to the Department of Psychology, Kansas State University, Manhattan, KS.
- Cowan, N. (2013, February). *Two types of cognitive load and foreign word learning*. Center for the Advanced Study of Language, College Park, MD.
- Cowan, N. (2012, October). *Working memory and the focus of attention*. Department of Psychology, University of Illinois, Urbana-Champaign.
- Cowan, N. (2012, October). *Measuring the contents of the conscious human mind*. University of Maryland Cognitive Science Colloquium. College Park, MD.
- Cowan, N. (2012, August). *Sharing attention between attributes within an object*. Portland workshop on working memory. Portland, OR.
- Hardman, K., & Cowan, N. (2012, August). *The capacity of visual working memory for complex, multi-feature objects*. Poster, Portland workshop on working memory. Portland, OR.
- Cowan, N. (2012, May). *Remembering to attend and attending to remember: the convoluted relation between attention and memory*. Department of Psychology, University of Zurich, Switzerland

- Cowan, N. (2012, March). *The control and storage of information in human working memory*. Attneave Lecture, Department of Psychology, University of Oregon
- Cowan, N. (2012, March) *Working memory and executive control: Does control control storage or does storage control control?* Arizona State University, 2nd Cognitive Symposium, Working Memory and Cognitive Control, Tempe, AZ.
- Cowan, N. (2011, December). *Attention limits in working memory*. Invited talk, Universidade Federal do Rio Grande do Norte, Natal, Brazil
- Cowan, N. (2011, November). *Attention limits in working memory*. Invited talk, Federal University of Sao Paulo, Brazil.
- Cowan, N. (2011, November). *How many things can you keep in mind?* Invited presentation to the Showme Chapter of the American Academy of Professional Coders (AAPC), Columbia, MO.
- Cowan, N. (2011, August). Invited commentator, First International Workshop on Cognitive and Working Memory Training, University of Maryland Center for the Advanced Study of Language (CASL), College Park, MD.
- Cowan, N. (2011, May). *Explaining the development of working memory capacity: What doesn't work?* In D. Balota, organizer, Varieties of Attentional Control: Working Memory, Lifespan changes, and Performance under the Wrath of God. Fellows' symposium. Annual convention of the Midwestern Psychological Association, Chicago, IL.
- Cowan, N. (2011, March). *Working memory and selective attention*. Invited presentation to the Southern Society for Philosophy and Psychology, New Orleans.
- Cowan, N. (2011, February). Discussant, *Symposium on Realistic Decision Making*, Columbia, MO.
- Cowan, N. (2010, October). *Visual objects and spoken words compete in working memory*. Invited talk presented to the Exploring the Mind lecture series, University of California, Davis, CA.
- Cowan, N. (2010, August). *Mental tricks that have confounded our search for basic working memory limits -- until now!* Paper presented within a symposium by J. Wixted, chair, "Quantifying the contents of working memory." Annual convention of the American Psychological Association, San Diego, CA.
- Cowan, N. (2010, June). *An embedded processes view of working memory*. Working Memory Workshop, Indianapolis, IN.
- Cowan, N. (2010, April). *Attention as inclusion and attention as exclusion: evidence from child development*. Paper presented at the annual convention of the Society of Experimental Psychologists, Philadelphia, PA.
- Cowan, N. (2010, April). *How many things can you keep in mind?* Saturday Morning Science series, Columbia, MO.
- Cowan, N. (2010, April). *A core component of working memory in the mind and brain*. Neurology Grand Rounds, University of Missouri, Columbia, MO.
- Cowan, N., & Naveh-Benjamin, M. (2010, March). *A modest effect of aging on capacity, and factors that magnify it*. Workshop on Working Memory and Ageing, Edinburgh, U.K.
- Cowan, N. (2010, February). *A core working memory faculty in the brain*. First Quench Hour Presentation, Brain Imaging Center, University of Missouri.
- Cowan, N. (2009, August). *Central working memory and its development explored: Keeping important things in an all-purpose basket*. Presidential Address, Division 3, Annual Convention of the American Psychological Association, Toronto.
- Cowan, N. (2009, February). *Errors in working/short-term memory: Review of models, methods and main findings*. Invited talk presented to the Development and Pilot Testing of a Technical Standard Operating Procedure (SOP) for Assessment of Health Product Names for Look-Alike/Sound-Alike Attributes, Education Session for Health Canada, Ottawa, Canada.
- Cowan, N., Morey, C.C., AuBuchon, A.M., Zwilling, C.E., & Gilchrist, A.L. (2009, April). *New insights into an old Problem: Distinguishing storage from processing in the development of working memory*. Part of a symposium organized by C. Jarrold, The Development of Working Memory: Interactions Between Processing and Storage Demands. Biennial Meeting of the Society for Research in Child Development, Denver.
- Cowan, N. (2008, September). *Amnesia and interference*. Invited talk presented to the Mid-Missouri chapter of the Society for Neuroscience, Columbia, Missouri.
- Cowan, N. (2008, July). *Intelligence, cognitive control, and working memory capacity: Three distinct relatives*

- of selective attention.* Invited presentation in a symposium entitled Intelligence and Cognitive Control, XXIX International Congress of Psychology, Berlin.
- Cowan, N., Morey, C.C., AuBuchon, A.M., Zwillling, C.E., Gilchrist, A.L., & Saults, J.S. (2008, July). *New insights into an old problem: Distinguishing storage from processing in the development of working memory.* Invited address at the Cours Avancé des Archives Jean Piaget, Geneva.
- Cowan, N. (2008, April). *How much of working memory is activated long-term memory?* Keynote address at the ESRC seminar, "Themes and trends in memory research: Beyond the retention of list sequences. A workshop focusing on links between long-term memory and immediate memory." Lancaster, UK.
- Cowan, N. (2007, September). *40 years of research on information processing: Are the old ways best?* Talk presented at G.U.V. as "oldie," Iowa City, IA.
- Cowan, N., Naveh-Benjamin, M., Kilb, A., & Saults, J.S. (2007, May). *Lifespan development of object-location binding in working memory: distinguishing between salience and precision.* Paper within a symposium by C.S. Li & U. Lindenberger entitled *Development of memory binding mechanisms across the life span.* Annual Convention of the American Psychological Society, Washington, D.C.
- Cowan, N. (2007, March). *How does short-term working memory operate? Making use of age differences.* Talk presented to the Department of Psychology, Western Illinois University, Macomb, IL.
- Cowan, N. (2007, May). *Differences between long-term, short-term, and working memory.* Paper presented at the Eleventh International Conference on Cognitive and Neural Systems, Boston.
- Cowan, N. (2007, May). *What are the differences between long-term, short-term, and working memory?* Paper presented at XXIXe International Symposium of GRSNC/CRSN, "The Essence of Memory," Montreal, Canada.
- Cowan, N. (2007, January). *How does short-term working memory operate? Making use of age differences.* Talk presented to the Educational Psychology Program, University of Missouri.
- Cowan, N. (2006, October). *Forgetting from short-term memory, then and now.* Paper presented at PisoniFest, Bloomington, Indiana.
- Cowan, N. (2006, September). *Forgetting from short-term memory, then and now.* Paper presented to the cognition and neuroscience area of the Department of Psychological Sciences, University of Missouri.
- Cowan, N. (2006, September). *How does short-term working memory operate? Making use of age differences.* Paper presented to the developmental area of the Department of Psychological Sciences, University of Missouri.
- Cowan, N., Fristoe, N.M., Elliott, E.M., Brunner, R.P., & Saults, J.S. (2006, July). *Distinguishing between the scope and control of attention in children and adults.* Paper presented within a symposium entitled "Working memory" (S. Gathercole, moderator) at the Fourth International Conference on Memory (ICOM-4), Sydney, Australia.
- Cowan, N. (2006, July). *When does time allow forgetting?* Paper presented within a symposium entitled "The role of time in short-term memory" (S. Lewandowsky, moderator) at the Fourth International Conference on Memory (ICOM-4), Sydney, Australia.
- Cowan, N., Fristoe, N.M., Elliott, E.M., Brunner, R.P., & Saults, J.S. (2006, July). *Distinguishing between the scope and control of attention in children and adults.* Invited talk presented at the University of Western Australia, Perth, Australia.
- Cowan, N. (2006, July). *When does time allow forgetting?* Invited talk presented at a workshop entitled *Memory and Concept Formation*, Margaret River, Australia.
- Cowan, N. (2006, March). *How is working memory capacity limited? Studies of time, attention, individual differences, and human development.* University of Kansas, Lawrence.
- Cowan, N., Saults, J.S., Sher, K.J., & Moreno, M.V. (2005, October). *Effects of acute alcohol intoxication on working-memory capacities of the focus of attention.* Invited talk presented at the 33rd International Medical Advisory Group Conference of the Alcoholic Beverage Medical Research Foundation, Chicago.
- Cowan, N., Elliott, E.M., Saults, J.S., & Morey, C.C. (2005, August). *Working-memory capacity limits and adjusting attention.* Invited talk presented at the Eleventh Cognitive Science Association for Interdisciplinary Learning (CSAIL), Hood River, Oregon.
- Cowan, N. (2005, June). *Time limits and item limits in working memory.* Invited talk presented at the University of York and the University of Edinburgh.

- Dewar, M., Della Sala, S., & Cowan, N. (2005, June). *Forgetting due to retroactive interference: A fuse of Müller and Pilzecker's (1900) early insights into everyday forgetting and recent research on anterograde amnesia*. TENNET, an annual convention of Theoretical and Experimental Neuropsychology, Montreal.
- Cowan, N., Elliott, E.M., Saults, J.S., & Hismjatullina, A. (2005, April). *Does the speed of recall influence the quality of immediate recall?* Talk presented as part of the symposium by C. Jarrold, "Speed and Span: Timing Issues in the Development of Children's Working Memory," Biennial meeting of the Society for Research in Child Development, Atlanta.
- Cowan, N., & Engle, R.W. (2005, May). *On Four Aspects of Working Memory: Causation, Activation, Time, and Decision-making*. Invited Symposium, Midwestern Psychological Association annual meeting, Chicago.
- Cowan, N. (2005, May). *The mystery of time in working memory*. Talk presented as part of the invited symposium entitled "On Four Aspects of Working Memory: Causation, Activation, Time, and Decision-making," Midwestern Psychological Association annual meeting, Chicago.
- Cowan, N. (2005, January). *Working memory and adjustable attention*. Invited talk in a symposium presented to the Society for Applied Research in Memory and Cognition, Wellington, New Zealand.
- Cowan, N. (2005, February). *Working-memory Capacity and Attention*. Invited talk presented to the School of Behavioral and Brain Sciences, University of Texas, Dallas.
- Cowan, N. (2004, August). *Limits of Attention in Working-Memory Storage*. Invited address presented at the second International Conference on Working Memory, Kyoto, Japan.
- Cowan, N. (2004, August). *Child development as a portal to working memory processes*. Invited talk within a symposium entitled Aspects of Working Memory (Alan Baddeley, Chair). XXVIII International Congress of Psychology, Beijing, China.
- Cowan, N. (2004, August). *Attention limits in working memory*. Invited talk within a symposium entitled Attention and Memory (Neil Mulligan, Chair). XXVIII International Congress of Psychology, Beijing, China.
- Cowan, N. (2004, May). *Remembering what you're saying and saying what you're remembering: The difficulties of interpreting and translating as viewed by a cognitive psychologist*. Invited address presented at the 25th Educational Conference of the National Association of Judiciary Interpreters and Translators, Denver, CO.
- Cowan, N. (2004, May). *Working-memory Capacity and Adjustable Attention*. Invited address presented at the annual convention of the American Psychological Society, Chicago, IL.
- Cowan, N. (2004, April). Keynote address. *Methods to examine the growth of working-memory capacity*. Second European Working Memory Symposium (EWOMS-2), Dijon, France.
- Cowan, N. (2004, April). *What's left of the magical number 7? Some limits on immediate-memory capacity*. Invited address presented to the Midwestern Psychological Association, Chicago, IL.
- Cowan, N. (2004, February). *Measures of working memory and accounts of individual differences in aptitude*. Talk presented in the Cognition & Neuroscience colloquium series, University of Missouri, Columbia.
- Cowan, N. (2004, February). *Scholastic ability and the development of working-memory capacity*. Talk presented in the Developmental colloquium series, University of Missouri, Columbia.
- Cowan, N. (2003, October). *Identifying a capacity limit of working memory*. Invited talk presented at the Department of Psychology, University of York, England, U.K., and to the Department of Psychology, Lancaster University, England, U.K.
- Cowan, N. (2003, May). *Measuring working-memory capacity*. Invited talk presented at the Institute for Psychology, Hungarian Academy of Sciences, Budapest, Hungary. Presented also in Dijon, France and at the University of Helsinki, Finland in the same month.
- Cowan, N., & Saults, J.S. (2003, May). *Auditory sensory memory works better than visual sensory memory in immediate recall. Why?* Invited talk presented in the symposium, "Sensory memory and working memory" (organizer: Erich Schröger) as part of the Third International Workshop on Mismatch Negativity and Auditory Functions and Dysfunctions, Lyon, France.
- Cowan, N. (2003, January). *Working-memory capacity limits in a theoretical context*. Invited talk presented at the 4th Tsukuba International Conference on Memory (Human Learning and Memory: Advances in Theory and Application), Tsukuba, Japan.
- Cowan, N., Beschin, N., & Della Sala, S. (2002, October). *Memory disorder as vulnerability to interference*.

- Paper presented within a symposium chaired by S. Della Sala, Stimulus wars: Interference between stimuli in memory. Presented at the annual convention of the Memory Disorder Research Society, San Francisco.
- Cowan, N. (2002, May). *Measuring children's working memory capacity*. Invited talk presented at the International Workshop on Young Children's Cognitive Development: Interrelationships among Executive Functioning, Working Memory, Verbal Ability, and Theory of Mind, Castle Hirschberg, Germany.
- Cowan, N. (2002, March). *Resistance to interference in working memory*. Invited talk presented to the Department of Psychology, University of Illinois, Champaign-Urbana, IL.
- Cowan, N. (2002, January). *Development of working memory: Some key parameters*. Invited talk presented at the Center for Cognitive Science, Ohio State University, Columbus, OH.
- Cowan, N. (2001, December). *A comparison of auditory and visual working memory processes*. Invited talk presented to the Department of Psychology, Indiana University, Bloomington, IA.
- Cowan, N. (2001, August). *Structured freedom: Making the undergraduate research experience a success*. McNair Program, University of Missouri.
- Cowan, N. (2001, July). *Measures of the childhood development of short-term memory capacity limits*. Presented in a symposium entitled "The mechanisms of verbal short-term memory and its development," C. Hulme & M. Poirier, co-Chairs. Third International Conference on Memory, Valencia, Spain.
- Cowan, N. (2001, July). *In what sense is working memory (WM) an activated subset of long-term memory (LTM)?* Presented in a symposium entitled "The connection between working memory and long-term memory," E. Service, Chair. Third International Conference on Memory, Valencia, Spain.
- Cowan, N. (2001, July). *Processing limits of selective attention and working memory: Potential implications for interpreting*. Presented at "Complex cognitive processes: Simultaneous interpreting as a research paradigm." Second Ascona Workshop, Ascona, Switzerland.
- Cowan, N. (2001, May). *The magical number 3.5, plus or minus 0.5: Some old and some recent ideas about working memory capacity*. Keynote address of the Showme Mental State conference, University of Missouri, Columbia, MO.
- Cowan, N. (2000, Fall). *Childhood development of some basic parameters of working memory*. Presented by invitation at 12 sites: the Institute for Cognitive Sciences in Paris, Cardiff University, University of Warwick, University College London Institute for Cognitive Neuroscience, Royal Holloway University, University of York, University of Aberdeen, University of Bristol (*Benjamin Meaker Lecture*), Cambridge University (*Alan Baddeley Lecture*), University of Loughborough, University of Southampton, and Oxford University.
- Cowan, N. (2000, December). *Working memory parameters in the childhood development of working memory*. Keynote address to the annual meeting of the Mathematics, Statistics, and Computing Section of the British Psychological Society, London, UK.
- Cowan, N. (2000, September). *The working-memory storage capacity concept and its viability: Understanding nuances and overcoming nuisances*. Keynote address to the 17th annual meeting of the Cognitive Psychology Section of the British Psychological Society, Essex, England, UK.
- Cowan, N. (2000, July). *On working memory capacity: Is there a numerical limit?* Invited paper presented within a symposium on working memory capacity limits at the International Congress of Psychology, Stockholm, Sweden.
- Cowan, N. (2000, April). *Some basic parameters in the development of working memory in childhood*. Invited talk presented at the Psychology Department, University of Indiana, Bloomington.
- Cowan, N. (2000, February). *Some basic parameters in the development of working memory*. Invited talk presented at the Psychology Department, Washington University, St. Louis.
- Cowan, N. (2000, February). *Some basic parameters in the development of working memory*. Invited talk presented at the Psychology Department, University of California, Santa Cruz.
- Cowan, N. (1999, December). *Some basic parameters in the development of working memory*. Invited address to the Second Tsukuba International Conference on Memory, Tsukuba, Japan.
- Cowan, N. (1999, August). *Working memory development: Are there fundamental processing parameters that change with development?* Invited talk presented at the University of Western Australia, Perth, Australia.
- Cowan, N. (1999, August). *The relation between attention and memory*. Invited talk presented to the Centre for Clinical Research in Neuropsychiatry, University of Western Australia, Perth, Australia.
- Cowan, N. (1999, August). *Working memory development: Are there fundamental processing parameters that*

- change with development?* Invited talk presented at the University of Queensland, St. Lucia, Australia.
- Cowan, N. (1999, June). *The ravages of absolute and relative amounts of time in short-term recall*. Invited paper presented at the Festschrift for Robert Crowder, Yale University, New Haven, CT.
- Cowan, N. (1999, May). *Working memory development: Are there fundamental processing parameters that change with development?* Invited talk presented at Humboldt University, Berlin.
- Cowan, N. (1999, May). *Working memory development: Are there fundamental processing parameters?* Invited paper presented at the Workshop on Working Memory, Institut für Allgemeine Psychologie, Leipzig, Germany.
- Cowan, N. (1999, April). *Attention and working memory*. Invited talk presented to the Psi Chi chapter at Westminster College, Fulton, MO.
- Cowan, N. (1999, April). *Working memory development: Are there fundamental processing parameters that change with development?* Invited talk presented at the Nathan Kline Institute for Psychiatric Research, Orangeburg, NY.
- Cowan, N. (1998, November). *The role of attention in short-term serial recall*. Invited paper presented at the Preconference on Attention and Memory, Dallas, TX.
- Cowan, N. (1998, April). *Children's memories of yestersecond: The development of immediate memory persistence, processing speed, and storage capacity*. Invited paper presented at the Department of Psychology, Washington University, St. Louis, MO.
- Cowan, N. (1998, July). *Children's memories of yestersecond: The development of immediate memory persistence, processing speed, and storage capacity*. Invited paper presented at the National Institutes of Health, Bethesda, MD.
- Cowan, N. (1997, July). *An embedded-processes model of working memory*. Invited paper presented at the Models of Working Memory Symposium, Boulder, CO.
- Cowan, N., & Gillam, R.B. (1997, May). *Working memory in children with and without language impairment*. Invited paper presented to the Midwestern Psychological Association, Chicago.
- Cowan, N. (1997, April). *Memories of yester-second: The role of decay in working memory*. Invited talk presented to the Psychology Department at the Georgia Institute of Technology, Atlanta.
- Cowan, N. (1997, April). *Decay and interference in short-term memory*. Invited paper presented as part of the Ellis-Battig Symposium of the Rocky Mountain Psychological Association annual conference, Reno.
- Cowan, N. (1997, February). *Memories of yester-second: The role of decay in working memory*. Invited talk presented to the Psychology Department at the University of Louisville.
- Cowan, N. (1996, July). Discussant, symposium entitled "The Organization of Memory Representations in Immediate Recall." International Conference on Memory, Padua, Italy.
- Cowan, N. (1996, July). *Separate rehearsal and retrieval mechanisms in the development of memory span*. Invited paper in a symposium entitled "Mechanisms of verbal short-term memory span and its development," International Conference on Memory, Padua, Italy.
- Cowan, N. (1995, November). Discussant, symposium entitled "Working Memory and Language." Annual convention of the Psychonomic Society, Los Angeles.
- Cowan, N. (1995, February). *The nature of auditory memory: Brain functioning and episodically related pitches (ERPs)*. Paper presented to the Department of Psychiatry, Albert Einstein College of Medicine.
- Multhaup, K.S., Balota, D.A., & Cowan, N. (1994, May). *Implications of aging, lexicality, and item length for the mechanisms underlying memory span*. Paper presented as part of a symposium: R. Engle, Chair, "New wrinkles on the articulatory loop," Midwestern Psychological Association, Chicago.
- Cowan, N., Wood, N.L., & Borne, D.N. (1994, May). *Reconfirmation of the short-term memory concept: Word-length effects in immediate versus through-list distractor recall*. Paper presented as part of a symposium: R. Engle, Chair, "New wrinkles on the articulatory loop," Midwestern Psychological Association, Chicago.
- Cowan, N. (1994, January). *Timing clues to the mechanisms of verbal short-term memory span*. Paper presented to the Psychology Department of the University of Texas, Austin.
- Cowan, N. (1993, October). *Response timing clues to the mechanisms of verbal short-term memory span*. Paper presented to the Psychology Department of Washington University, St. Louis.
- Cowan, N. (1993, May). *Controversies concerning short-term memory and selective attention*. Paper presented

- at the University of Helsinki, Finland.
- Cowan, N. (1992, October). *The timing of processes contributing to verbal short-term memory*. Paper presented to the Psychology Department of the University of Kansas, Lawrence, KS.
- Cowan, N. (1992, May). *Sensory memory, its traits, and its role in information processing*. Invited address presented at the Tenth International Conference on Event-Related Potentials of the Brain (EPIC X), Eger, Hungary.
- Cowan, N. (1991, November). *Activation, attention, and short-term memory*. Paper presented as part of a symposium entitled, "Short-term memory: Where do we stand?" Annual meeting of the Psychonomic Society, San Francisco, CA.
- Cowan, N. (1991, May). *Speakers' access to the phonemic structure of the syllable in word games*. Paper presented to the Experimental Psychology Laboratory of the Universite' Libre de Bruxelles, Brussels, Belgium.
- Cowan, N. (1991, April). *Memory for speech with and without attention and rehearsal*. Paper presented to the Psychology Department of the University of Helsinki, Finland, and to the Low Temperature Laboratory, Otaneimi, Finland.
- Cowan, N. (1990, November / December). *Memory for speech with and without attention and rehearsal*. Paper presented at 4 universities in Great Britain: Oxford, Manchester, Cardiff, and Cambridge
- Cowan, N. (1990, May). *How would you describe the information processing system?* Invited paper, Midwestern Psychological Association, Chicago, IL.
- Cowan, N. (1989, April). *Talking backward: An informative, unusual language skill*. Department of Psychology, University of Missouri, Rolla.
- Cowan, N. (1988, April). Moderator, paper session: *Concepts and categories*. Annual convention of the Midwestern Psychological Association, Chicago, IL.
- Cowan, N. (1987, May). Moderator, invited symposium: *Lexical acquisition, retention, and processing in children*. (Includes Cowan, N., *The development of rehearsal and phonological memory*.) Annual convention of the Midwestern Psychological Association, Chicago, IL.
- Cowan, N. (1986, April). *Auditory memory*. Workshop on Complex Sound Perception, Sarasota, Florida.
- Cowan, N. (1985, November). *Echoic storage in infancy*. Department of Human Development, University of Kansas, Lawrence, KS.
- Cowan, N. (1985, October). *A model of auditory sensory storage and integration*. Department of Psychology, Washington University, St. Louis, MO.
- Cowan, N., & Leavitt, L. A. (1985, August). *Evidence from fluent backward talkers on the development of speech representation*. University of Wisconsin Pediatrics Lecture Series, Madison, WI.
- Cowan, N. (1984, December). *Temporal properties of auditory memory*. Institute for Sensory Research, Syracuse University, Syracuse, NY.
- Cowan, N. (1984, January). *Studies in auditory memory development*. Haskins Laboratories, New Haven, CT.
- Cowan, N. (1984, January). *Identifying phonemes and syllables: Evidence from people who rapidly reorder speech*. Department of Psychology, Yale University, New Haven, CT.
- Cowan, N. (1983, November). *Identifying phonemes and syllables: Evidence from people who rapidly reorder speech*. Central Institute for the Deaf, St. Louis, MO.
- Cowan, N. (1983, November). *Studies in auditory memory development*. Department of Psychology, Washington University, St. Louis, MO.
- Cowan, N. (1983, February). *Identifying phonemes and syllables: Evidence from backward talkers*. Cognitive Science Group, University of Massachusetts/Amherst, MA.
- Cowan, N. (1981, November). *Processing of linguistic units: Evidence from fluent backward talkers*. New York Psycholinguistics Circle, New York, NY.

Conference Presentations:

- Superbia-Guimarães, L., Guitard, D., & Cowan, N. (2025, April 2-4). *Testing Item, Chunk, and Similarity-Based Constraints on Working Memory with the Multiple-Set Paradigm*. Experimental Psychology Society Meeting, Lancaster, UK.

- Curtis, A. F., Costa*, A. N., Musich*, M., Nowakowski*, L., Young*, K., Eberhardt*, K., Rzeppa*, C., Beversdorf, D. Q., Cowan, N., & McCrae, C. S., (2025, June). Cognitive training in Mild Cognitive Impairment and Insomnia (TRAIN-MCI): Preliminary effects on cognition and sleep. Poster presentation at the annual meeting of the Associated Professional Sleep Societies SLEEP Conference, Seattle, WA.
- Alt, M., Gray, S., Levy, R., Hogan, T., & Cowan, N. (2024, July). Word learning models for children: Invariance for Spanish-English bilinguals? Talk as part of the: Associations and dissociations between phonological and semantic aspects of word learning seminar at the XVIth International Congress for the Study of Child Language (IASCL), Prague, Czech Republic.
- Lavers, R., Superbia-Guimarães, L., Cowan, N. (2024, April). *Blue, Left, Ampersand, Diamond: The Development of Memory for Mixed & Homogenous Object Series*. Poster presented at Show Me Research Week, Columbia, Missouri.
- Lavers, R., Superbia-Guimarães, L., Cowan, N. (2024, April). *Blue, Left, Ampersand, Diamond: The Development of Memory for Mixed & Homogenous Object Series*. Poster presented at Midwestern Psychological Association, Chicago, Illinois.
- Hendrix, K. D., Cowan, N., & DuVall, B. (2024, April). *Exploring the boundaries of attribute amnesia: Can an intervening task modify how much is forgotten?* Paper presented at the 61st Missouri Annual Missouri Academy of Science, Saint Joseph, MO.
- Guitard, D., & Cowan, N. (2024, July). *Item and Order Memory for Concurrent and Successive Bisensory Stimuli*. Poster presented at the International Conference on Working Memory, Leeds, UK.
- Superbia-Guimaraes, L., & Cowan, N. (2024, July). *How the Focus of Attention Manages to Hold Multiple Sets of Information in Working Memory*. Poster presented at the International Conference on Working Memory, Leeds, UK.
- Bao, C., & Cowan, N. (2024, July). *The Trajectory of Working Memory: Examining Age-Related Changes for Object and Features*. Poster presented at the International Conference on Working Memory, Leeds, UK.
- Bao, C., & Cowan, N. (2023, November). *Generalization of Skill for a Working Memory Recognition Training Procedure in Children: The Benefit of Starting with Easy Materials*. Poster, Psychonomic Society annual meeting, San Francisco, CA.
- SUPERBIA-GUIMARÃES, L., & Cowan, N. (2023, November). *Working Memory Capacity for Multiple Unrelated Materials*. Psychonomic Society annual meeting, San Francisco, CA.
- SUPERBIA-GUIMARÃES, L., LAVERS, R., STEIGER, M., HENDRIX, K., & COWAN, N. (2023, November). *Semantic Elaboration in Working Memory: Adult Strategies and Training of Children*. Poster, Psychonomic Society annual meeting, San Francisco, CA.
- Cowan, N., & Superbia Guimaraes, L. (2023, May). *Developmental Stability and Change in Allocating Attention in Working Memory*. Talk presented to the Society of Experimental Psychologists, Philadelphia.
- Guitard, D. & Cowan, N. (2023, September). *No Tradeoff Between Chaining and Position in Short-Term Memory*. Paper presented at the 23rd European Society for cognitive psychology, Porto, Portugal.
- Logie, R.H., Forsberg, A., Doherty, J., Cowan, N., Camos, V., Naveh-Benjamin, M., Barrouillet, P., Belletier, C., GrahaWm, A., & Rhodes, S. (2022, November). *Differential Age-Related Decline Across Tasks Is Compatible with Domain Specific and Domain General Working Memory*. Paper presented at the annual convention of the Psychonomic Society, Boston.
- Guitard, D., & Cowan, N. (2022, November). *The Tradeoff Between Item and Order Information in Short-Term Memory Does Not Depend on Encoding Time*. Paper presented at the annual convention of the Psychonomic Society, Boston.
- Curtis, A. F., Eberhardt, K., Wilhelm, J., Schmiedeler, A., Stokes, G., Atkinson, A., Cowan, N., & McCrae, C. S. (2022, June). Effects of Cognitive Training on Sleep and Daytime Functioning in Older Adults with Insomnia: A Pilot Study. *Annual SLEEP meeting of the American Academy of Sleep Medicine and the Sleep Research Society*, Charlotte, NC.
- Valentini, B., Cowan, N. & Vergauwe, E. (2022, March). *The speed of memory: Assessing age-related increases in working memory speed*. Oral presentation at the 4th Swiss Working Memory meeting. Fribourg, Switzerland.
- Costa, A. N., Musich, M., Knous, D., McCrae, C. S., Cowan, N., & Curtis, A. F. (2022, June). *The Role of Objective Sleep on Subjective and Objective Cognition in Older Adults with Insomnia: A Pilot Study*. Annual

- SLEEP meeting of the American Academy of Sleep Medicine and the Sleep Research Society, Charlotte, NC.
- Mehl, K., Adams, E.J., & Cowan, N. (2022, April). *Language Comprehension Under a Working Memory Load in Children*. Psi Chi program, 94th Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
- Gniadek, H., Guitard, D., & Cowan, N. (2022, April). *The impact of social presence via Zoom on working memory*. Psi Chi program, 94th Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
- Brimer, B., Guitard, D., & Cowan, N. (2022, April). *Melody and Working Memory*. Psi Chi program, 94th Annual Meeting of the Midwestern Psychological Association, Chicago, IL.
- Cowan, N. (2021, June). *Module and feature-similarity accounts of working memory interference*. Parcevall Hall online conference on working memory.
- Costa, A.N., McCrae, C.S., Cowan, N., & Curtis, A.F. (2021, November). *Characteristics of Sleep Moderate Associations Between Objective and Subjective Cognition*. Psychonomic Society Conference. New Orleans, Louisiana.
- Curtis, A. F., Schmiedeler, A., Eberhardt, K., Wilhelm, J., Cowan, N., & McCrae, C. (2021, November). *Cognitive training in middle-aged adults with Generalized Anxiety Disorder: Preliminary impact on sleep and daytime functioning*. 62nd Annual meeting of the Psychonomic Society, online presentation.
- Valentini, B., Cowan, N., & Vergauwe, E. (2021, November). *Comparing Adults' Working Memory Search Rates in Subspan vs. Supraspan Situations: A Novel Approach of Developmental Relevance*. 62nd Annual meeting of the Psychonomic Society, online presentation.
- Gray, S., Levy, R., Alt, M. Hogan, T, and Cowan, N. (2021, June). *Working memory predicts new word learning over and above existing vocabulary and nonverbal IQ*. Talk accepted for presentation at the Symposium on Research in Child Language Disorders, Madison, WI.
- Röer, J. P., & Cowan, N. (2021, March). *A replication and an extension of the cocktail party phenomenon*. Paper presented at the 62nd Conference of Experimental Psychologists. "Tagung experimentell arbeitender Psychologen" (TeaP). Online.
- Forsberg, A., Guitard, D., Adams, E.J., Greene, N., Pattanakul, D., Naveh-Benjamin, M., & Cowan, N. (2021, June). *From working memory to long-term memory - across the lifespan*. Visual working memory symposium, online.
- Greene, N.R., Naveh-Benjamin, M., & Cowan, N. (2021, June). *Adult age differences in working memory capacity: Spared central storage but deficits in ability to maximize peripheral storage*. Visual working memory symposium, online.
- Logie, R., Cowan, N., Camos, V., Barrouillet, P., Naveh-Benjamin, M., Doherty, J., Belletier, C., Jaroslawska, A., Rhode, S., & Forsberg, A. (2020, November). *WoMAAC: Working Memory Across the Adult Lifespan: Adversarial Collaboration*. Annual convention of the Psychonomic Society. Online.
- Forsberg, A., Guitard, D., & Cowan, N. (2020, November). *Working Memory Encoding Improves Subsequent Long-Term Memory Retrieval*. Annual convention of the Psychonomic Society. Online.
- Jaroslawska, A., Rhodes, S., Forsberg, A., Doherty, J. Belletier, C., Naveh-Benjamin, M., Cowan, N., Camos, V., Barrouillet, P., & Logie, R. (2020, November). *Age Differences in Working Memory Dual Task Costs: Exploring the Impact of Trial Timing Manipulations*. Annual convention of the Psychonomic Society. Online.
- Jancetic-Bidelman, T., Bhangal, S., Barton, A.U., Cowan, N., Valle-Inclan, F., & Hackley, S. (2020, October). *Intrusion into awareness of words unconsciously registered into visual working memory*. International Cultural Neuroscience Society virtual meeting, Brandeis University.
- Underwood Barton, A., Valle-Inclán, F., Cowan, N., & Hackley, S.A. (2020, October). *Sensitivity of the contralateral delay activity (CDA) to unconsciously perceived visual information*. Society for Psychophysiological Research, online annual meeting. Originally planned for Vancouver.
- Forsberg, A., Blume, C.L., & Cowan, N. (2020, September). *Does subjective awareness of working memory capacity limits improve with age?* Tenth European Working Memory Symposium, Virtual online meeting.
- Gray, S., Hogan, T. P., Fox, A., Komesidou, R., Alt, M., & Cowan, N. (2020, February). *The structure of working memory in school-age children with dyslexia*. Poster presented at the Pacific Coast Research Conference, San Diego, CA.
- Nguyen, A.T., & Cowan, N. (2020, April). *Syntactic structure and verbatim and gist memory for spoken discourse*. Poster presented at the annual convention of the Midwestern Psychological Association, Chicago,

IL.

- Davis, MF, Alt, M, Alkhadim, G, Gray, S, Hogan, T, Cowan, N. (2019, November). *Exploring Word Learning Patterns Using Cluster Analysis*. Annual meeting of the American Evaluation Association, Minneapolis, MN.
- Alkhadim, G, Alt, M, Davis, MF, Gray, S, Hogan, T, Cowan, N. *Exploring Word Learning Patterns Using Latent Class Analysis*. (2019, November). Annual meeting of the American Evaluation Association, Minneapolis, MN.
- Alkhadim, G, Alt, M, Davis MF, Gray, S, Hogan, T, Cowan, N. (2019, November). *Exploring Word Learning Patterns Using Latent Profile Analysis*. Annual meeting of the American Evaluation Association, Minneapolis, MN.
- Camos, V., Belletier, C., Doherty, J., Jaroslawaska, A., Rhodes, S., Cowan, N., Naveh-Benjamin, M., Barrouillet, P., & Logie, R. (2019, November). *Strategic Adaptation to Dual Task in Verbal Working Memory*. Paper presented at the annual meeting of the Psychonomic Society, Montreal, Canada.
- Cowan, N. (2019, October). *Working memory capacity development: reconciling childhood and infant findings*. Poster, Annual meeting of the Cognitive Development Society, Louisville, KY.
- Adams, E.J., & Cowan, N. (2019, October). *Working memory and quality control in children's novel production of passive sentences*. Poster, Annual meeting of the Cognitive Development Society, Louisville, KY.
- Sacchetta, M., Cleveland, A., Gray, S, Alt, M., Hogan, T., & Cowan, N. (2019, November). *Parental Ratings of Attention & Performance on Central Executive Working Memory Tasks*. Poster presented at the Annual convention of the American Speech and Hearing Association, Orlando, Florida.
- Gray, S., Lancaster, H., Alt, M., Hogan, T., Levy, R., & Cowan, N. (2019, November). *The Structure of Word Learning in Young School-Age Children*. Paper presented at the Annual convention of the American Speech and Hearing Association, Orlando, Florida.
- Segura, I.A., McGhee, J., Della Sala, S., Cowan, N., & Pompéia, S. (2019, June). *A reappraisal of acute doses of benzodiazepines as a model of anterograde amnesia*. Society for Applied Research in Memory and Cognition (SARMAC), Cape Cod, MA, USA.
- Peter, B., Hogan, T.P., Alt, M., Green, S., Cowan, N., Schrauwen, I., Naymik, M., Sacchetta, M., Vose, C., Deshpande, K., Guido, J., & Gray, S. (2018, November). *Dense microarray genotypes validate genes of interest for disorders of spoken and written language*. American Speech-Language-Hearing Association Annual Convention, Boston, MA.
- Vergauwe, E., Price, M. H., Uittenhove, K., Cowan, N., & Johnson, J. D. (2018). *Decoding the content of the focus of attention in a working memory task: Electrophysiological evidence for refreshing*. San Francisco, CA: Cognitive Neuroscience Society.
- Cabbage, K.L., Stanley, C., Morgan, K., Gray, S., Alt, M., Cowan, N., Green, S., Hogan, T.P. (2018, November). *Phonological processing in children with dyslexia: Analyzing non-word repetition error types*. American Speech-Language-Hearing Association Annual Convention, Boston, MA.
- Peter, B., Hogan, T., Alt, M., Green, S., Cowan, N., Schrauwen, I., Naymik, M., Sacchetta, M., Vose, C., Deshpande, K., Guido, J., & Gray, S. (2018). *Copy-number variations in children with disorders of spoken and written language point to genes with prenatal cerebellar expression*. American Society of Human Genetics Meeting, San Diego, Oct. 16-20, 2018.
- Cowan, N., Rhodes, S., Doherty, J.M., Jaroslawska, A., Belletier, C., Naveh-Benjamin, M., Barrouillet, P., Camos, V., & Logie, R.H. (2018, November). *Scientific Arguments in the Airwaves and Inside the Head: Payoffs of an Adversarial Collaboration on Working Memory*. Psychonomic Society annual convention, New Orleans, LA.
- Vergauwe, E., Ricker, T., Langerock, N., & Cowan, N. (2018, June). *Consolidation and/or refreshing: What do people typically do between list items?* Poster at the 3rd Jean Piaget Conferences: The origins of number. Geneva, Switzerland.
- Uittenhove, K., Ricker, T., Cowan, N., & Vergauwe, E. (2018, June). *Sternberg memory scanning 50 years later: A new comparison between item and order retrieval rate*. Poster at the 3RD Jean Piaget Conferences: The origins of number. Geneva, Switzerland.
- Morey, C., Rhodes, S., & Cowan, N. (2018, July). *Consistent findings from patient cases that challenge theories of specialized short-term memory*. Ninth European Working Memory Symposium (EWOMS), Pavia, Italy.
- Logie, R. H., Doherty, J. M., Jaroslawska, A. J., Rhodes, S., Cowan, N., Naveh-Benjamin, M., Belletier, C.,

- Barrouillet, P. & Camos, V. (2018, February). *Frontiers of memory research: Working memory across the adult lifespan*. Paper presented at the Panjab University. Chandigarh, India.
- Logie, R. H., Doherty, J. M., Jaroslawska, A. J., Belletier, C., Barrouillet, P., Camos, V., Rhodes, S., Cowan, N., & Naveh-Benjamin, M., (2018, February). *Working memory across the adult lifespan*. Paper presented at the Thapar Institute of Engineering and Technology. Patiala, India.
- K.R. Bellesheim, J.L. Sokoloff, K.E. Bodner, K.M. Boland, N. Cowan, and S.E. Christ. (2018, May). *Visual Working Memory in Adolescents with Autism Spectrum*. INSAR Annual Meeting (International Society for Autism Research), Rotterdam, Netherlands.
- Rhodes, S., Jaroslawska, A., Doherty, J., Belletier, C., Naveh-Benjamin, M., Cowan, N., Camos, V., Barrouillet, P., & Logie, R. (May, 2018). *Working memory across the adult lifespan: age effects on simultaneous storage and processing*. Poster presented at Cognitive Aging Conference. Atlanta, GA.
- Sacchetta, M., Gray, S., Green, S., Alt, M., Hogan, T., & Cowan, N. (2017, November). *Working Memory Increases in Elementary Age Children*. Poster presented at the annual convention of the American Speech and Hearing Association (ASHA), Los Angeles.
- Doherty, J.M., Belletier, c., Rhodes, S., Jaroslowska, A., Camos, V., Barrouillet, P., Cowan, N., Naveh-Benjamin, M., & Logie, R.L. (2017, November). *Dual-task costs on storage and processing in young adults: an adversarial collaboration*. Poster presented at the 58th Annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
- Logie, R.L., Doherty, J.M., Jaroslowska, A., Rhodes, S., , Cowan, N., Naveh-Benjamin, M., Belletier, C., Barrouillet, P., & Camos, V. (2017, November). *Storage and Processing in Working Memory: An Adversarial Collaboration*. Presentation at the 58th Annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
- Jaroslawska, A. J., Rhodes, S., Doherty, J., M., Belletier, C., Camos, V., Barrouillet, P., Cowan, N., Naveh-Benjamin, M., & Logie, R. H. (September 2017). *When the old to at least as well as the young: Cognitive abilities that remain intact across the adult lifespan*. Paper presented at the annual Centre for Cognitive Ageing and Cognitive Epidemiology (CCACE) Research Day. Edinburgh, United Kingdom.
- Cowan, N. (2017, November). *Children's Multimodal Working Memory: The Development of Needing Less Attention?* Presentation at the 58th Annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
- Rhodes, S., Jaroslawska, A., Doherty, J., Camos, V., Barrouillet, P., Belletier, C., Cowan, N., Naveh-Benjamin, M., & Logie, R. (2017, November). *Simultaneous Storage and Processing Across the Adult Life Span*. Poster presented at the 58th Annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
- Blume, C.L., & Cowan, N. (2017, November). *Estimates of Working Memory Capacity: What Researchers Think We Know vs. What Participants Think They Know*. Poster presented at the 58th Annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
- Belletier, C., Doherty, J., Jaroslawska, A., Rhodes, S., Cowan, N., Naveh-Benjamin, M., Logie, R., Barrouillet, P., & Camos, V. (2017, November). *Strategic Adaptations to Dual Tasking and Concurrent Articulation in Working Memory*. Poster presented at the 58th Annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
- Underwood, A., Valle-Inclan, F., Cowan, N., & Hackley, S. A. (2017). *Does unconscious information take up space in visual working memory?* Poster presentation at the Society for Psychophysiological Research Conference. Vienna, Austria.
- Chekaf, M., Mathy, F., & Cowan, N. (2017, July). *Simple and Complex Working Memory Tasks Allow Similar Benefits of Information Compression*. Poster presented at the 39th Annual Conference of the Cognitive Science Society. London, England, UK.
- Chekaf, M., Cowan, N., & Mathy, F. (2017, August). *Compressibilité de l'Information dans des Tâches d'Empan Simple et Complexe*. Poster presented at the 58th Annual Conference of the Société Française de Psychologie. Nice, France.
- Hogan, T. P., Green, S.B., Alt, M., Gray, S., & Cowan, N. (2017, October). *The structure of working memory in children with dyslexia*. New England Research on Dyslexia Society Conference, Storrs, CT.
- Logie, R., Cowan, N., Camos, V., Barrouillet, P., Naveh-Benjamin, M., Doherty, J., Rhodes, S., Jaroslawska, A., & Belletier, C. (2017, June). *Testing three working memory theories in young adults*. Parcevall Hall meeting

- on working memory, Skipton, UK.
- Jaroslawsky, A., Rhodes, S., Doherty, J., Belletier, C., Camos, V., Barrouillet, P., Cowan, N., Naveh-Benjamin, M., & Logie, R. (2017, June). *Simultaneous storage and processing across the adult lifespan*. Parcevall Hall meeting on working memory, Skipton, UK.
- Cowan, N. (2017, September). *What is the meaning of memory decay?* In symposium by A. Soemer, Mechanisms of forgetting in working memory. European Society of Cognitive Psychology (ESCOP), Potsdam, Germany.
- Cowan, N. (2017, September). *Beyond everything going up with age: Unloading central attention*. In symposium by A. Shimi & C. Morey, Working memory from childhood to adulthood: what influences memory performance? European Society of Cognitive Psychology (ESCOP), Potsdam, Germany.
- Logie, R., Doherty, J., Jaroslawska, A., Cowan, N., Naveh-Benjamin, M., Rhodes, S., Barrouillet, P. Belletier, C., & Camos, V. (2017, September). *Processing and storage in working memory: An adversarial collaboration*. European Society of Cognitive Psychology (ESCOP), Potsdam, Germany.
- McGhee, J., Cowan, N., Beschin, N., Mosconi, C., Della Sala, S. (2017, September). *Additive benefits of minimising interference before and after learning in amnesic patients*. Sixth Scientific Meeting, Federation of the European Societies of Neuropsychology, Maastricht, Netherlands.
- Arizmendi, G. D., Alt, M., Gray, S. Hogan, T., Green, S., & Cowan, N. (2017, June). *Exploring the Bilingual Advantage in 2nd Grade Children: Monolingual and Bilingual Performance on Central Executive Tasks of Working Memory*. Poster presented at the Symposium on Research in Child Language Disorders, University of Wisconsin-Madison, Madison, Wisconsin.
- Mettler, H., Alt, M., Gray, S., Hogan, T., Green, S., & Cowan, N. (2017, June). *Sentence Production and Phonological Working Memory in School-Age Children*. Poster presented at Symposium on Research in Child Language Disorders, Madison, WI.
- Blume, C.L. & Cowan, N. (2017, March). *Relevance of Personal Belief about Working Memory Capacity*. International Meeting of the Psychonomic Society, Vienna, Austria.
- Gray, S., Green, S., Alt, M., Hogan, T., & Cowan, N. (2017, July). *Working memory profiles of children with dyslexia, language impairment, and typical development*. Society for the Scientific Study of Reading 24th Annual Meeting, Halifax, Nova Scotia.
- Mathy, F., Chekaf, M., & Cowan, N. (2016, November). *How to make a simple span task as complex as a complex span task*. Poster presented at the 57th Annual meeting of the Psychonomic Society, Boston, MA.
- Doherty, J.M., Rhodes, S., Barrouillet, P., Camos, V., Cowan, N., Naveh-Benjamin, M., & Logie, R.L. (2016, November). *Working memory across the adult lifespan: an adversarial collaboration*. Poster presented at the 57th Annual meeting of the Psychonomic Society, Boston, MA.
- Underwood, A.L., Valle-Inclan, F., Cowan, N., & Hackley, S.A. (2016, November). *Unconscious Information Processing in Working Memory*. Poster presented at the 57th Annual meeting of the Psychonomic Society, Boston, MA.
- Rhodes, S., Parra, M.A., Cowan, N., & Logie, R.H. (2016, November). Interaction Effects in Detection and Recognition: Choice of Sensitivity Measure and Type I Error Rate. Poster presented at the 57th Annual meeting of the Psychonomic Society, Boston, MA.
- Rhodes, S., Cowan, N., Hardman, K.O., & Logie, R.H. (2016, June). *Informed guessing in change detection*. Parcevall Hall meeting on working memory, Skipton, UK.
- Alt, M., Hogan, T., Green, S., Gray, S., Cabbage, K., & Cowan, N. (2016, February). *Word learning deficits in children with dyslexia*. Poster presented at Pacific Coast Research Conference. Catalina, CA.
- Langerock, N., Vergauwe, E., Hardman, K., Ricker, T., & Cowan, N. (2016, September). *The nature of refreshing: mere reactivation or semantic elaboration as well?* Poster to be presented at VIIIth European Working Memory Symposium. Liège, Belgium.
- Vergauwe, E., Price, M., Douglass, A., Henry, F., Cowan, N., & Johnson, J.D. (2016, September). *Using EEG to decode the content of the focus of attention in a complex span task: Can we find evidence for spontaneous refreshing?* Poster to be presented at VIIIth European Working Memory Symposium. Liège, Belgium.
- Cowan, N. (2016, September). *Working memory capacity sharing through off-loading and reactivation*. Paper presented at EWOMS VIII (European Working Memory Symposium VIII), Liège, Belgium.
- Majerus, S., Cowan, N., Péters, F., & Phillips, C. (2016, September). The dorsal attention network supports both

- working memory control and working memory load: an fMRI multivariate voxel pattern analysis study. Paper presented at EWOMS VIII (European Working Memory Symposium VIII), Liège, Belgium.
- Logie, R., Doherty, J., Cowan, N., Naveh-Benjamin, M., Rhodes, S., Camos, V., & Barrouillet, P. (2016, September). Working Memory across the adult lifespan: An adversarial collaboration. Paper presented at EWOMS VIII (European Working Memory Symposium VIII), Liège, Belgium.
- Cowan, N., Hogan, T.P., Alt, M., Green, S., Cabbage, K.L., Brinkley, S., & Gray, S. (2016, June). *Profiles of Memory Span: A Microanalysis of Span Elucidates Developmental Dyslexia With and Without Specific Language Impairment*. Oral presentation at the Symposium on Research in Child Language Disorders, Madison, WI.
- Gray, S., Alt, M., Hogan, T., Brinkley, S., Schlesinger, N., Green, S., & Cowan, N. (2016, June). *Children with dyslexia and concomitant dyslexia and SLI show different phonological processing deficits, but not visual recall deficits, during word learning*. Poster presented at the Symposium on Research in Child Language Disorders, Madison, WI.
- Erikson, J., Alt, M., Gray, S., Hogan, T., Green, S., & Cowan, N. (2016, June). *Phonological transfer during word learning: Evidence from bilingual school-age Spanish-English-speaking children*. Oral presentation at the Symposium on Research in Child Language Disorders, Madison, WI.
- Hogan, T. P., Green, S.B., Alt, M., Gray, S., Brinkley, S., & Cowan, N. (2016, July). *Modeling working memory in school-age children with dyslexia*. Society for the Scientific Study of Reading Annual Convention, Porto, Portugal.
- Baron, L.S., Hogan, T.P., Alt, M., Gray, S., Cabbage, K.L., Brinkley, S., Green, S.B., & Cowan, N. (2016, July). *Orthographic facilitation during word learning in children with dyslexia*. Society for the Scientific Study of Reading Annual Convention, Porto, Portugal.
- Cowan, N. (2016, May). *Can Phenomena Be Stated in a Theory-Neutral Manner?* In symposium by S. Lewandowsky, "Benchmarks of Working Memory." International Meeting of the Psychonomic Society, Granada, Spain.
- Rhodes, S., Parra, M.A., Cowan, N. & Logie, R.H. (2016, May). *Healthy Ageing and Binding in Visual Working Memory: Mixed Versus Blocked Designs*. International Meeting of the Psychonomic Society, Granada, Spain.
- Tamm, G., Rahe, T., Palu-Laeks, M., Salakka, S. & Cowan, N. (2016, July). *The Effect of Age on Visual Working Memory, Metamemory, and Behavioural Inhibition in 18-50 Years Old Women and Men*. Poster to be presented at the 24th biennial meeting of the International Society for the Study of Behavioural Development, Vilnius, Lithuania
- Baron, L. S., Hogan, T. P., Alt, M., Shelley, G., Cabbage, K. L., Green, S.B., & Cowan, N. (2016, July). *Predictors of orthographic boost during word learning in second-graders with dyslexia and language impairment*. In symposium led by S. Adlof, entitled, Oral and written word learning in special populations: Dyslexia, SLI, and second-language learners. Society for the Scientific Study of Reading Annual Convention, Porto, Portugal.
- Doherty, J.M., Cowan, N., & Logie, R.H. (2015, November). *Residual memory performance during dual-tasking*. Poster presented at the annual convention of the Psychonomic Society, Chicago, IL.
- Rhodes, S., Parra, M.A., Cowan, N., & Logie, R.L. (2015, November). *Visual Working Memory and Change Detection: Reassessing Whole Display Interference*. Poster presented at the annual convention of the Psychonomic Society, Chicago, IL.
- Hogan, T.P., Gray, S., Alt, M., Baron, L., Cabbage, K.L., Green, S.B. & Cowan, N. (2015, July). *Orthographic influences on word learning by second-graders with dyslexia and typical development*. Society for the Scientific Studies of Reading, Kona, Hawaii.
- Tamm, G., Rahe, T., Palu-Laeks, M., Salakka, S., & Cowan, N. (2016, July, submitted). The effect of age on visual working memory, metamemory, and behavioural inhibition in 18-50 years old women and men. 24th Biennial Meeting of the International Society for the Study of Behavioural Development, Vilnius, Lithuania.
- Gray, S., Hogan, T., Alt, M., Green, S., Brinkley, S., & Cowan, N. (2016, March). *Working Memory Deficits in Children with Dyslexia: Beyond Phonology?* Paper presented to the annual convention of the British Dyslexia Association international Conference, Oxford, UK.
- Starrett, M., Gosseries, O., Saad, E., Cowan, N., & Postle, B.R. (2015, October). *Delay-period activity of the parietal cortex depends on working memory load, not interference*. Poster presented at the annual convention

- of the Society for Neuroscience, Chicago.
- Tamm, G., & Cowan, N. (2015, August). *The interplay between emotions and cognitive task performance*. Poster presented at the European Conference on Visual Perception, Liverpool, U.K.
- Clark, K.M., Hardman, K.O., Schachtman, T.R., Sauls, J.S., Glass, B.A., & Cowan, N. (2015, November). *Development of working memory capacity and precision for tone pitch*. Poster presented at the annual convention of the Psychonomic Society, Chicago, IL.
- Vergauwe, E., & Cowan, N. (2015, November). *In and out of the focus of attention: The effects of a secondary task on information held in working memory*. Annual convention of the Psychonomic Society, Chicago, IL.
- Cowan, N. (2015, November). *How many objects changed? An array memory technique shows a potential consequence of metamemory*. Annual convention of the Psychonomic Society, Chicago, IL.
- Baron, L., Hogan, T., Alt, M., Gray, S., Cabbage, K., Limson, C., Brinkley, S., Green, S., & Cowan, N. (2015, November). *Orthographic Influences on Word Learning by Second-Graders With Comorbid Dyslexia & Specific Language Impairment*. Paper presented at the annual convention of the American Speech-Language-Hearing Association, Denver, CO.
- Gray, S.I., Green, S.B., Alt, M., Hogan, T.P., Brinkley, S., & Cowan, N. (2015, October). *The Structure of Working Memory in Young Children with Typical Development*. Poster presented at the annual convention of the Cognitive Development Society, Columbus, Ohio.
- Clark, K.M., Hardman, K., Schachtman, T.R., Sauls, J.S., Glass, B.A., & Cowan, N. (2015, October). *Development of working memory capacity and precision for tones*. Poster presented at the annual convention of the Cognitive Development Society, Columbus, Ohio.
- Tamm, G., & Cowan, N. (2015, August). *The interplay between emotions and cognitive task performance*. Poster presented at the European Visual Perception Conference, Liverpool, UK.
- Vergauwe, E., & Cowan, N. (2015, September). *Examining the operation of attentional refreshing through the probe-span task*. Oral presentation in symposium "Attentional refreshing in human working memory" at the 14th meeting of the Swiss Psychological Society. Geneva. Switzerland.
- Arizmendi, G.D., Alt, M., Gray, S., Hogan, T., Green, S., & Cowan, N. (2015, June). *Word learning in Spanish-English bilingual children*. Poster to be presented at the thirty-sixth Annual Symposium on Research in Child Language Disorders, University of Wisconsin, Madison, WI.
- Cota, M., Alt, M., Gray, S., Hogan, T., & Cowan, N. (2015, January). *Are Symptoms of Specific Language Impairment confused with the symptoms of an attentional Issue?: An exploratory study*. Undergraduate Biological Research Program poster, University of Arizona, Tucson, AZ.
- Hogan, T.P., Gray, S., Alt, M., Green, S.B., Cabbage, K.L. & Cowan, N. (2014, October) *Working memory in children with dyslexia*. 2nd Annual Meeting of the New England Research on Dyslexia (NERDY) Society, Boston, MA.
- Edwards, L., Alt, M., Gray, S., Hogan, T., Green, S., & Cowan, N. (2014, November). *Parental Ratings of Attention and Central Executive Performance of Children with and without Specific Language Impairment*. Annual Biomedical Research Conference for Minority Students, San Antonio, TX.
- Majerus, S., & Cowan, N. (2014, September). *Visual and verbal materials to be remembered produce a common neural pattern: Evidence for attention-based accounts of working memory*. Oral presentation at the European Working Memory Symposium (EWOMS 7), Edinburgh, UK.
- Cowan, N. (2014, June). *Memory for the amount of change in an array*. Parcevall Hall meeting on working memory, Skipton, UK.
- Blume, C.L., & Cowan, N. (2014, November). *Switch costs and the focus of attention*. Poster, Psychonomic Society annual convention, Long Beach, CA.
- Rhodes, S., Parra, M.A., Cowan, N., & Logie, R. (2014, November). *The Effect of Age on Visual Working Memory for Features and Conjunctions*. Poster, Psychonomic Society, Long Beach, CA.
- Rouder, J., Thiele, J., & Cowan, N. (2014, November). *Evidence for a Guessing in Working-Memory Judgments*. Paper, Psychonomic Society, Long Beach, CA.
- Vergauwe, E., Roemer, E., & Cowan, N. (2014, November). *Tracing Thoughts Through the Probe-Span Task: Microanalytic Evidence That People Mentally Refresh Items in Working Memory*. Select Speaker Award talk, Psychonomic Society, Long Beach, CA.
- Gilchrist, A.L., & Cowan, N. (2014, November). *Examining speed of visual working memory shows evidence*

- for two search processes.* Poster, Psychonomic Society annual convention, Long Beach, CA.
- Cowan, N., Sauls, J.S., & Blume, C.L. (2014, November). *How many items changed?* Paper, Psychonomic Society annual convention, Long Beach, CA.
- Hogan, T.P., Gray, S., Alt, M., Green, S.B., Cabbage, K.L. & Cowan, N. (2014, September). *Working memory deficits in children with dyslexia: global or local?* Oral presentation presented at the European Working Memory Symposium (EWOMS 7), Edinburgh, UK. Presented by Katie Cabbage.
- Vergauwe, E., Roemer, E., & Cowan, N. (2014, September). *Attending to items in working memory: Microanalytic evidence for high-speed mental refreshing.* Oral presentation to be presented at the European Working Memory Symposium (EWOMS 7), Edinburgh, UK.
- Cowan, N. (2014, September). *Using the development of working memory capacity to understand cognitive development.* Oral presentation at the European Working Memory Symposium (EWOMS 7), Edinburgh, UK.
- Rhodes, S., Parra, M.A., Cowan, N., & Logie, R.H. (2014, September). *Does healthy ageing affect the ability to bind features in visual working memory?* Talk presented at the European Working Memory Symposium (EWOMS 7), Edinburgh, UK.
- Kukk, G., Kreegipuu, K., & Harro, J., & Cowan, N. (2014, May). *Is working memory accuracy affected by the valence and arousal?* Paper presented at the annual meeting, Midwestern Psychological Association, Chicago.
- Cowan, N. (2014, May). *Peoples' judgment of the number of differences between two successive visual arrays.* Data blitz presentation, Showme Mental State convention, St. Louis.
- Alt, M., Gray, S., Hogan, M., Green, S., & Cowan, N. (2014, June). *Word learning deficits in children with dyslexia: More than phonology.* Symposium on Research in Child Language Disorders, Madison, WI.
- Majerus, S., Cowan, N., Phillips, C., & Schrouff, J. (2014, June). *Focused attention predicts neural patterns during working memory.* Poster presented at the Organization for Human Brain Mapping, Hamburg, Germany.
- Rhodes, S., Parra, M.A., Cowan, N., & Logie, R.H. (2014, April). *Is feature binding in visual working memory age invariant?* Poster, Cognitive Aging Conference, Atlanta.
- Vergauwe, E., Roemer, E., & Cowan, N. (2014, July). *Evidence that people use available time to mentally refresh information to be remembered.* Poster, International Conference on Working Memory, Cambridge, UK.
- Hardman, K., & Cowan, N. (2014, July). *Storage of multi-feature visual objects in working memory.* Poster, International Conference on Working Memory, Cambridge, UK.
- Rhodes, S.P., Logie, R.H., Parra, M.A., & Cowan, N. (2014, July). *Is feature binding in visual working memory age invariant?* Poster presented at the International Conference on Working Memory, Cambridge, UK.
- Li, D., Cowan, N., & Christ, S. E. (2013, November). *Domain general and domain specific neural networks in working memory.* Poster presented at the annual convention of the Society of Neuroscience, San Diego, CA
- Valle-Inclán, F., Lee, E.-Y., Li, D., Cowan, N., Ricker, T.J., and Hackley, S.A. (2013, October). *Cortical thickness correlates of working memory capacity in healthy younger and older adults and in Parkinson's disease.* Poster presented at the annual meeting of the Society for Psychophysiology Research, Florence.
- Ricker, T.J., & Cowan, N. (2013, November). *Presentation method influences time-based forgetting through working memory consolidation.* Poster presented at the annual convention of the Psychonomic Society, Toronto, Canada.
- Vergauwe, E.A., & Cowan, N. (2013, November). *Object-based and feature-based memory search in visual working memory.* Poster presented at the annual convention of the Psychonomic Society, Toronto, Canada.
- Valle-Inclán, F., Lee, E.-Y., Cowan, N., Johnson, J.D., Christ, S., Rolan, T., & Hackley, S.A. (2012). *Atrophy of pre-SMA uniquely predicts reduced working memory capacity in Parkinson's disease.* *Psychophysiology*, 49, s96 (supplement). Based on Society for Psychophysiological research, annual conference presentation.
- Cowan, N. (2012, September). *Adapting a mathematical model of working-memory capacity for verbal recognition.* European Working Memory Symposium (EWOMS 6), Fribourg, Switzerland.
- Ricker, T.J., & Cowan, N. (2012, November). *Presentation style influences time-based forgetting in working memory.* Poster presented at the annual convention of the Psychonomic Society, Minneapolis.
- Cowan, N., Blume, C.L., & Sauls, J.S. (2012, November). *Separate capacity limits for objects and their attributes.* Paper presented at the annual convention of the Psychonomic Society, Minneapolis.

- Withouse, K.D., Cowan, N., & Gilchrist, A.L. (2012, May). How information is accessed from visual working memory. Psi Chi Poster Session, Midwestern Psychological Association Annual Convention, Chicago, IL.
- Spiegel, L.R., Cowan, N., Schachtman, T., & Sauls, J.S. (2012, May). Effects of cueing the relevance of items in short-term sentence recognition. Psi Chi Poster Session, Midwestern Psychological Association Annual Convention, Chicago, IL.
- Donnell, K.L., Cowan, N., & Sauls, S. (2012, May). Formation of chunks in the focus of attention. Psi Chi Poster Session, Midwestern Psychological Association Annual Convention, Chicago, IL.
- Dewar, M., Alber, J., Butler, C., Cowan, N., & Della Sala, S. (2012, March). *Improving 7-day memory via a brief wakeful rest*. British Neuropsychological Society Spring Meeting, London.
- Cowan, N. (2012, February). *Test scaling in cognitive development: For some elementary processes, one need not adjust test difficulty*. Talk presented at the Methodology special conference of the Society for Research in Child Development, Tampa, FL.
- Ricker, T.J., & Cowan, N. (2011, November). Forgetting from working memory feature by feature. Poster presented at the annual convention of the Psychonomic Society, Seattle, WA.
- AuBuchon, A.M., & Cowan, N. (2011, November). Chunking in working memory does not depend on rehearsal. Paper presented at the annual convention of the Psychonomic Society, Seattle, WA.
- Gilchrist, A.L., & Cowan, N. (2010, November). *Limited to one item, or more than one item: Capacity limits in the focus of attention*. Poster presented at the annual convention of the Psychonomic Society, St. Louis.
- Ricker, T.J., & Cowan, N. (2010, November). *Forgetting from visual working memory: Time and attention both matter*. Paper presented at the annual convention of the Psychonomic Society, St. Louis.
- AuBuchon, A.M., & Cowan, N. (2010, August). To remember and forget: Individual differences in working memory span. Paper presented at the annual convention of the APA, San Diego.
- Boone, A., & Cowan, N. (2010, May). *What is the capacity of the focus of attention?* Paper presented at Psi Chi as part of the Midwestern Psychological Association convention, Chicago.
- Cowan, N. (2009, November). *After 50 years, the fate of attention and working memory theories*. Paper presented at the 50th annual convention of the Psychonomic Society, Boston.
- AuBuchon, A.M., & Cowan, N. (2009, November). *Remembering and forgetting concurrently: New benefits of high working memory span*. Poster presented at the 50th annual convention of the Psychonomic Society, Boston.
- Gilchrist, A.L., Cowan, N., & Naveh-Benjamin, M. (2009, November). *Chunk size or number of chunks: What explains working memory development?* Poster presented at the 50th annual convention of the Psychonomic Society, Boston.
- Cowan, N. (2009, April). *Working memory capacity redux*. Paper presented at the annual convention of the Society of Experimental Psychologists, Boulder, CO.
- Chen, Z., & Cowan, N. (2008, March). *Is There A Core Verbal Working Memory Capacity?* Research & Creative Activities Forum, Behavioral Sciences Division, MU. [NOTE: This talk won the second-place award.]
- Dewar, M., Fernandez Garcia, Y., Cowan, N., & Della Sala, S. (2008, September). *New long term memory in amnesiacs after an interference-free delay*. Poster presented at the First Meeting of the Federation of the European Societies of Neuropsychology, Edinburgh.
- Chuah, Y.M.L., Cowan, N., Venkatraman, V., Tan, J.-C., & Chee, M.W.L. (2007, November). *The neural mechanisms supporting visual short-term memory for feature conjunctions*. Poster presented at the annual convention of the Society for Neuroscience, San Diego, CA.
- Lee, E.-Y., Cowan, N., Rolan, T., Vogel, E.K., Valle-Inclán, F., & Hackley, S. (2007, October). *Neural mechanisms of visual working memory deficits*. Poster presented at the annual convention of the Society for Psychophysiological Research, Savannah, Georgia.
- Gilchrist, A.L., Cowan, N., & Naveh-Benjamin, M. (2007, November). *A deficit in immediate recall of language in older adults*. Poster at the annual convention of the Psychonomic Society, Longbeach, CA.
- Dewar, M., Della Sala, S. & Cowan, N. (2007, August). *Improving memory consolidation in patients with anterograde amnesia via minimal retroactive interference*. BPS Cognitive Psychology Section XXIV, Annual Conference, University of Aberdeen.
- Cowan, N., Sauls, J.S., & Morey, C.C. (2007, August). *Distinguishing central and domain-specific components*

- of working memory*. Talk presented at the Thirteenth Cognitive Science Association for Interdisciplinary Learning (CSAIL), Hood River, Oregon.
- Chen, Z., & Cowan, N. (2007, May). *Three effects of chunking in an immediate free recall task*. Annual Convention of the American Psychological Society, Washington, D.C.
- Dewar, M., Della Sala, S., Cowan, N., & Garcia, Y.F. (2007, July). *Improving memory consolidation in patients with amnesic MCI via Minimal Retroactive Interference*. Joint Meeting of the Psychonomic Society and the Experimental Psychology Society, Edinburgh, U.K.
- Dewar, M., Della Sala, S., Cowan, N., & Garcia, Y.F. (2007, March). *Improving memory consolidation in patients with amnesic MCI via Minimal Retroactive Interference*. 8th Annual Alzheimer's Research Trust Network Conference, Edinburgh, U.K.
- Cowan, N., Morey, C.C., & Saults, J.S. (2007, July). *Advances in understanding central capacity limits in working memory*. Joint Meeting of the Psychonomic Society and the Experimental Psychology Society, Edinburgh, U.K.
- Cowan, N., Morey, C.C., & Saults, J.S. (2007, March). *Developmental clues to working memory processes in a verbal-spatial mapping task*. Poster presented at the biennial meeting of the Society for Research in Child Development, Boston.
- Morey, C.C., & Cowan, N. (2006, November). *People use attention in working memory tasks, but many fail to allocate it*. Poster presented at the annual convention of the Psychonomic Society, Houston, TX.
- Dewar, M., Della Sala, S. & Cowan, N. (2006, November). "Yes, I remember." *Improved delayed recall in anterograde amnesiacs following minimal retroactive interference*. Presentation at the Scottish Neuropsychology Network Scientific Meeting, Glasgow.
- Cowan, N. (2006, July). *When does time allow forgetting? Some speculations*. Paper presented to the Showme Mental State conference, Washington University, St. Louis.
- Chen, Z., & Cowan, N. (2006, May). *Chunk limits and length limits in immediate recall: A reconciliation*. Poster presented at the annual convention of the American Psychological Society, New York.
- Chen Z., & Cowan, N. (2006, April). *A Reconciliation of Capacity Limits and Length Limits in Immediate Recall*. Poster presented at Missouri Life Science Week, University of Missouri, Columbia.
- Morey, C.C. & Cowan, N. (2006, April). *For Working Memory, People Use Attention But Many Fail To Allocate It*. Poster presented at Missouri Life Sciences Week, University of Missouri, Columbia.
- Towse, J.N., Cowan, N., & Horton, N. (2005, November). *When silence speaks louder than words? Using recall dynamics and recall quality to investigate working memory*. Paper presented at the annual convention of the Psychonomic Society, Toronto.
- Morey, C.C., & Cowan, N. (2005, November). *Allocating attention to cross-domain stimuli in working memory*. Poster presented at the annual convention of the Psychonomic Society, Toronto.
- Cowan, N., Chen, D., Morey, C.C., Bunting, M.F., & Saults, J.S. (2005, June). *What is the capacity limit of consciousness awareness?* Paper presented at the annual convention of the Association for the Scientific Study of Consciousness, Pasadena, CA.
- Sussman, E., Winkler, I., Cowan, N., Khan, F.J., & Ellis, M.A. (2005, April). *Electrophysiological evidence for detection and storage of multiple feature patterns in auditory cortex*. Paper presented at the annual convention of the Cognitive Neuroscience Society, New York.
- Bunting, M.F., & Cowan, N. (2004, November). *Working-memory retrieval takes attention: Effects of distraction under time pressure*. Poster presented at the annual meeting of the Psychonomic Society, Minneapolis.
- Morey, C.C., & Cowan, N. (2004, November). *Evidence of cross-domain attention limits in working memory*. Poster presented at the annual meeting of the Psychonomic Society, Minneapolis.
- Colflesh, G.J.H., Bunting, M.F., Cowan, N., & Conway, A.R.A. (2004, May). *Working memory capacity affects how to-be-ignored information is processed*. Poster presented at the annual convention of the American Psychological Society, Chicago.
- Bunting, M., & Cowan, N. (2004, May). *Bye-bye buffers: Temporary storage is (partially) a matter of attention*. Poster presented at the annual convention of the American Psychological Society, Chicago.
- Morey, C.C., & Cowan, N. (2004, May). *When do visual and verbal working-memory tasks conflict?* Poster presented at the annual convention of the American Psychological Society, Chicago.

- Beschin, N., Cowan, N., & Della Sala, S. (2003, May). *Gli effetti dell'interferenza retroattiva in amnesia anterograda possono essere ridotti*. 3° Congresso Nazionale Disabilità Trattamento Integrazione, Padova, Italy.
- Cowan, N., Elliott, E.M., & Saults, J.S. (2003, April). *Development of working memory depends on the measure: Attentional and strategic aspects of working memory*. Paper presented at the biennial convention of the Society for Research in Child Development, Tampa, FL.
- Elliott, E.M., & Cowan, N. (2002, November). *Attentional processes in the disruption of serial recall by irrelevant sounds*. Poster presented at the annual convention of the Psychonomic Society, Kansas City, MO.
- Beschin, N., Cowan, N., & Della Sala, S. (2002, October). *Prose memory in amnesia under very low interference conditions*. Joint meeting of the French and Italian Neuropsychology Societies, Paris. Abstract appears in *Revue Neuropsychologique*.
- Beschin, N., Cowan, N., Della Sala, S., and Perini, M. (2002, September). *Low interference conditions improve amnesia in MCI*. Paper presented to the annual meeting of SIN, the Societa' Italiana di Neurologia, Italian Society of Neurology, Naples. Abstract: *Neurological Sciences*, (2002), 23, S126.
- Cowan, N., Beschin, N., & Della Sala, S. (2002, May). *Just lying there, remembering*. Paper presented at the Showme Mental State conference, Department of Psychology, Washington University.
- Cowan, N., Beschin, N., & Della Sala, S. (2002, July). *Just lying there, remembering: Questioning the boundary between short- and long-term memory on the basis of minimal-interference testing conditions of amnesiacs*. Paper presented at the Quebec'02 Conference on Short-term/Working Memory, Quebec, Canada.
- Elliott, E.M., & Cowan, N. (2002, April). *Don't talk or play music: Multiple mechanisms of short-term memory interference from speech and tones*. Paper presented at the annual convention of the Midwestern Psychological Association, Chicago, IL.
- Cowan, N., Saults, J.S., & Elliott, E.M. (2001, November). *A comparison of auditory and visual working-memory processes*. Paper presented at the annual convention of the Psychonomic Society, Orlando, FL.
- Cowan, N., Towse, J.N., Hamilton, Z., Saults, J.S., & Elliott, E.M. (2001, September). *Timing of processing and recall of a sentence-span task in children*. Poster presented at the 12th Conference of the European Society for Cognitive Psychology and the 18th Annual Conference of the British Psychological Society, Cognitive Psychology Section (joint meeting), Edinburgh, Scotland, UK.
- Brunner, R., & Cowan, N. (2000, February). *Working Memory: Exploring the nature of capacity limits and the role of unattended measures of capacity*. McNair Scholars Conference, University of Missouri.
- Geer, T., & Cowan, N. (2000, February). *Training children to group items in memory span tasks*. McNair Scholars Conference, University of Missouri.
- Berti, S., Schröger, E., Cowan, N., & Winkler, I. (2000, April). *Aufmerksamkeit und auditorisches Gedächtnisseine EKP-Studie*. Vortrag auf der 42. Tagung experimentell arbeitender Psychologen, Braunschweig. (Germany)
- Rinne, T., Gratton, G., Fabiani, M., Cowan, N., Maclin, E., Stinard, A., Sinkkonen, J., Alho, K., & Naatanen, R. (1999). Scalp-recorded optical signals elicited by sound processing in the visual cortex. *Psychophysiology*, 36, S96 (Abstract).
- Conway, A., Cowan, N., Bunting, Therriault, & Minkoff. (1999, November). *Memory capacity, processing speed, and fluid intelligence: Is working memory capacity = Spearman's g?!* Paper presented at the annual convention of the Psychonomic Society, Los Angeles, CA.
- Elliott, E.M., & Cowan, N. (1999, November). *Adaptation to auditory distractors in a cross-modal, color-word interference task*. Paper presented at the annual convention of the Psychonomic Society, Los Angeles, CA.
- Cowan, N. (1999, April). *Different rates of processing develop at different rates*. Paper presented at the Showme Mental State conference, Columbia, MO.
- Cowan, N. (1999, April). *The differential maturation of two processing speeds related to digit span*. Paper presented at the biennial convention of the Society for Research in Child Development, Albuquerque, NM.
- Conway, A.R.A., Cowan, N., & Bunting, M.F. (1998, November). *Working memory capacity and the cocktail party effect: Don't gossip about a low span behind his back*. Paper presented at the annual convention of the Psychonomic Society, Dallas, TX.
- Cowan, N. (1998, June). *Wait a second! The meaning of pauses between words in spoken responses within memory span tasks*. Paper presented at the Showme Conference, Washington University, St. Louis.

- Hulme, C., Newton, P., Cowan, N., Stuart, G., & Brown, G. (1998, June). *The effects of item length and lexicality on short-term memory: A response timing analysis*. Paper presented at the International Conference on Short-term Memory, Quebec, Canada.
- Elliott, E.M., & Cowan, N. (1998, April). *The resilience of cross-modal Stroop-like interference*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago.
- Cowan, N., Nugent, L.D., Elliott, E.M., Ponomarev, I., & Saults, J.S. (1998, June). *Working memory span for ignored digits*. Paper presented at the International Conference on Short-term Memory, Quebec, Canada.
- Gomes, H., Sussman, E., Ritter, W., Kurtzberg, D., Cowan, N., & Vaughan, H. G., Jr. (1996, November). *Developmental changes in an electrophysiological measure of short term memory*. Paper presented to the Society for Neuroscience, Washington, D.C..
- Wood, N.L., Stadler, M.A., & Cowan, N. (1995, November). *Memory without attention in Eich's (1984) procedure? Not so fast!* Paper presented at the annual convention of the Psychonomic Society, Los Angeles, CA.
- Wood, N., & Cowan, N. (1995, May). *Direct and indirect tests of information in attended versus ignored auditory channels*. Paper presented at the annual convention of the Midwestern Psychological Association, Chicago, IL.
- Cowan, N., Wood, N.L., & Keller, T.A. (1995, April). *Why is speaking rate correlated with memory span?* Paper presented at the biennial convention of the Society for Research in Child Development, Indianapolis.
- Cowan, N., Keller, T., Hulme, C., Roodenrys, S., McDougall, S., & Rack, J. (1994, July). *Response timing clues to the mechanisms of age and word length effects on memory span*. Paper presented at the International Conference on Working Memory, Magdalene College, Cambridge, U.K.
- Keller, T.A., Cowan, N. (1994, May). *Can auditory sensory information be rehearsed?* Paper presented at the annual convention of the Midwestern Psychological Association, Chicago.
- Wood, N., & Cowan, N. (1994, May). *Moray revisited: Attention shifts to one's name in an ignored auditory channel*. Paper presented at the annual convention of the Midwestern Psychological Association, Chicago.
- Winkler, I., Cowan, N., Csépe, V., Czigler, I., Teder, W., & Näätänen, R. (1993, October). *Deactivation and reactivation of auditory sensory memory traces as reflected by the mismatch negativity ERP component*. Paper presented at the annual meeting of the Society for Research in Psychophysiology, Rotach-Egern, Germany.
- Saults, J.S., & Cowan, N. (1993, March). *Development of memory for unattended spoken words*. Paper presented at the biennial convention of the Society for Research in Child Development, New Orleans, LA.
- Keller, T.A., & Cowan, N. (1993, March). *Developmental increase in the duration of auditory memory for tones*. Paper presented at the biennial convention of the Society for Research in Child Development, New Orleans, LA.
- Wood, N., & Cowan, N. (1992, November). *Attention shifts to a subtle physical change during selective listening*. Paper presented at the annual convention of the Psychonomic Society, St. Louis, MO.
- Day, L., & Cowan, N. (1992, November). *The absence of phonological similarity effects in phonologically disordered children*. Paper presented at the annual convention of the American Speech-Language Hearing Association (ASHA), San Antonio, TX.
- Gillam, R., Cowan, N., & Day, L. (1992, November). *Memory functions in specifically language impaired and normally-achieving children*. Paper presented at the annual convention of the American Speech-Language Hearing Association (ASHA), San Antonio, TX.
- Cowan, N., & Leavitt, L.A. (1990, April). *Speakers' access to the phonological structure of the syllable in word games*. Paper presented at the 26th regional meeting of the Chicago Linguistic Society, parasession on the Syllable in Phonetics and Phonology, Chicago, IL.
- Cowan, N., Day, L., Saults, J.S., Flores, L., Johnson, T., & Keller, T. (1991, July). *Output delay effects on serial recall*. Paper presented at the International Conference on Memory, University of Lancaster, Lancaster, England, U.K.
- Cowan, N., Keller, T.A., & Saults, J.S. (1989, November). *Does silent strategic processing affect echoic memory?* Paper presented at the annual convention of the Psychonomic Society, Atlanta, GA.
- Cowan, N., Lichty, W., & Grove, T. (1987, August). *Memory for unattended speech during silent reading*. Paper presented to the Second International Conference on Practical Aspects of Memory, Swansea, Wales,

U.K.

- Cowan, N., & Leavitt, L. A. (1987, July). *Children who can talk backward: 5 years later*. Paper presented at the Fourth International Congress for the Study of Child Language, Lund, Sweden.
- Cowan, N., Cartwright, C., Winterowd, C., & Sherk, M. (1987, April). *A bridge between the speech memory systems of young children and adults*. Paper presented at the biennial meeting of the Society for Research in Child Development, Baltimore, MD.
- Cowan, N. (1986, November). *Evidence of structure within the vowel system in speech memory*. Paper presented at the annual convention of the Psychonomic Society, New Orleans, LA.
- Cowan, N. (1985, November). *Quantitative aspects of auditory sensory storage, integration, and processing*. Paper presented at the annual convention of the Psychonomic Society, Boston, MA.
- Cowan, N., Daly, T., & Kielbasa, L. A. (1985, April). *Temporal properties of echoic memory in preschool children*. Paper presented at the biennial meeting of the Society for Research in Child Development, Toronto, Ontario, Canada.
- Cowan, N., & Cowan, P. R. (1983, November). *Auditory memory across 20 seconds in preschool children*. Paper presented at the annual convention of the Psychonomic Society, San Diego, CA.
- Cowan, N., Tamis-Le Monda, C., & Braine, M. D. S. (1983, April). *Children's knowledge of semantic categories implied but not stated*. Paper presented at the biennial convention of the Society for Research in Child Development, Detroit, MI.
- Cowan, N., & Leavitt, L. A. (1982, November). *Natural algorithms for language play*. Paper presented at the annual convention of the Psychonomic Society, Minneapolis, MN.
- Cowan, N., Suomi, K., & Morse, P. A. (1982, March). *Temporal properties of echoic storage in infancy*. Paper presented at the International Conference on Infant Studies, Austin, TX.
- Petrovich-Bartell, N., Cowan, N., & Morse, P. A. (1981, August). *Perceptual and acoustic attributes of infant distress vocalizations*. Paper presented at the Second International Congress for the Study of Child Language, Vancouver, British Columbia.
- Cowan, N., & Leavitt, L. A. (1981, August). *Talking backward: Speech play in late childhood*. Paper presented at the Second International Congress for the study of Child Language, Vancouver, British Columbia.
- Cowan, N. (1981, August). *Toward an understanding of morphological segmentation*. Paper presented at the annual convention of the American Psychological Association, Los Angeles, CA.
- Cowan, N., & Leavitt, L. A. (1981, May). *Juggling acts with linguistic units*. Paper presented at the annual convention of the Chicago Linguistic Society, IL.
- Cowan, N., Suomi, K., & Morse, P. A. (1981, April). *Echoic storage in infant perception*. Paper presented at the biennial convention of the Society for Research in Child Development, Boston, MA.
- Goodsitt, J., Morse, P. A., Cowan, N., & Ver Hoeve, J. N. (1981, April). *Infant speech perception in a multisyllabic world*. Paper presented at the biennial convention of the Society for Research in Child Development, Boston, MA.
- Cowan, N., Leavitt, L. A., Massaro, D. W., & Kent, R. D. (1980, April). *Speaking backwards: A case study*. Paper presented at the annual convention of the Acoustical Society of America, Atlanta, GA.
- Cowan, N., & Morse, P. A. (1979, June). *Influence of task demands on the categorical versus continuous perception of vowels*. Paper presented at the annual convention of the Acoustical Society of America, Boston, MA.

University Service:

University of Massachusetts

Member, Graduate Affairs Committee, Department of Psychology

University of Missouri

Director, Brain Imaging Center, 2008-2011

Director, Cognition & Neuroscience Training Area (2005-2007)

Director, Experimental Training Area (1994 - 1996)

Elected Chair, Arts & Science Executive Committee, 2013-2014
Chair, neuroscience symposium committee (2005)
Chair, Departmental Human Subjects Committee (9/86-9/90 & 9/91-9/92)
Chair, Arts & Science Human Subjects Committee (9/86-9/90)
Chair, Search Committee in Developmental Psychology (1988-89)
Chair, Search Committee in Experimental Psychology (1991-92)
Chair, Search Committee in Cognitive Neuroscience (1997-98)
Chair, 2 faculty members' Promotion & Tenure Committees (1992-94)
Chair, 3 faculty member's promotion to Full Professor (1995- 2003)
Chair, Space Committee (1992-1993)
Chair, Centennial Celebration, Part I (1998)
Co-Chair, Cognitive Neuroscience Senior Search (1994-95)
Acting Associate Chair, Department of Psychology (Winter, 1994)

Elected Member, Executive Committee, College of Arts & Science, University of Missouri (2012-2015)
Elected Member, Faculty Council, University of Missouri (2000-2002)
Elected Member, Advisory Committee, Department of Psychological Sciences (2001-02)

Member, Alumni Relations and Development Committee, 2018
Member, MU Research Responsibility Committee, 2018-
Member, Communique Committee, 2017-2018
Member, Search Committee, Vice President for Academic Affairs, university system (2013)
Member, Distinguished Lecture Series Committee, 2012-
Member, Experimental Training Committee (1985-2000)
Member, Cognition and Neuroscience Training Committee (2000 - present)
Member, Search Committee in Cognitive Neuropsychology (1986-87)
Member, Search Committee in Experimental Psychology (1987-88)
Member, Departmental Long Range Planning Committees (10/87-5/90)
Member, Personnel Committee (1989 - present)
Member, Departmental Chair Evaluation Committee (1992-93)
Member, Committee for the Curriculum on Undergraduate Education (1994-1996)
Member, Departmental Self-study Committee (1990, 1995)
Member, Arts & Science Faculty Awards Committees (1997-1999; 2003)
Member, Foreign Travel Committee, University of Missouri (1998-99)
Member, History and Future Directions Committee (1996-97)
Member, MU Presidential Award for Research and Creativity (1999)

Teaching Experience:

University of Wisconsin-Madison
(Assistantships including discussion or laboratory sections)

Introductory Psychology
Experimental Psychology
Developmental Psychology

New York University

Developmental Psychology

University of Massachusetts at Amherst

Applied and Basic Cognitive Development (Graduate Level, team taught)
Auditory Perception Seminar
Child Behavior and Development
Independent Readings in Developmental Psychology
Language Development Seminar
Perceptual Development Seminar
Psychology as a Natural Science
Seminar in Developmental Psychology

University of Missouri

Advanced Seminar in Information Processing
Cognitive Psychology (both graduate and undergraduate versions)
Human Senses (laboratory course)
Perception
Perception and Thought
Research Methods
Research Seminar in Experimental Psychology
Seminar in Cognitive Development
Seminar in Working Memory
Seminar in Memory & Attention
Discussion leader for Ethical Conduct of Research (Biochemistry Dept.)

Mentoring Activity

Doctoral Students and Their Current Positions

J. Scott Saults, Ph.D., 1992 (Graduate Student Excellence Award)
Emeritus, Research Associate, University of Missouri

Timothy A. Keller, Ph.D., 1994
Senior Research Associate, Carnegie Mellon University

Linda S. Day, Ph.D., 1995
Research Associate Professor Emerita, Communication Sciences and Disorders, University of Missouri

Noelle Wood, Ph.D., 1996 (Graduate Student Excellence Award)
Project Manager, Rhode Island Department of Mental Health

Emily M. Elliott, Ph.D., 2001 (Several MU Awards and Alumnus Lecture)
Professor, Louisiana State University

Anna Hismjatullina, Ph.D., 2006
Chair, Department of Applied Behavior Analysis, Moscow Institute of Psychoanalysis

Candice C. Morey, Ph.D., 2007.
Currently Senior Lecturer, University of Cardiff, UK
(Predoctoral NRSA, NIH, Cowan sponsor; In 2008, one of 2 winners of the Outstanding Ph.D. Dissertation Award at the University of Missouri. 2017 winner of Psychonomic Society Early Career Award.)

Zhijian (David) Chen, Ph.D., 2009

Lab Manager, Laboratory of Cognitive and Brain Development, Wayne State University

Amanda L. Gilchrist, Ph.D., 2011

Associate Professor, Cottey College, Nevada, Missouri

(Graduate Student Excellence Awards from the Department of Psychological Sciences and from Life Sciences. In 2011, winner of award for best dissertation on campus.)

Angela M. AuBuchon, Ph.D., 2012

Director, Working Memory and Language Laboratory, Boys Town National Research Hospital, Omaha, Nebraska

Timothy J. Ricker, Ph.D., 2013

Assistant Professor, University of South Dakota

(2012 Departmental Graduate Student Excellence Award; Predoctoral NRSA, NIMH, 2011-2013, Cowan sponsor).

Dawei Li, Ph.D., 2013

Postdoctoral Associate, Department of Psychology and Neuroscience, Duke University

Gerly Kukk (now Tamm), Ph.D.

2013-2015, visiting student from University of Tartu, Estonia

Kyle Hardman, Ph.D. 2017

(Life Sciences Fellowship; 2013 Department of Psychological Sciences Outstanding Master's Thesis Award)

Christopher L. Blume, Ph.D., 2018

Trains tutors for a private tutoring company in California.

Eryn Adams, Ph.D., 2021

Health Science Policy Analyst, NICHD

Formerly Postdoctoral Scientist, Baby's First Years project and University of New Orleans

(Ridgel Fellowship; Diversity Award, Cognitive Development Society, 2019; Outstanding Graduate Instructor Award, 2020)

Postdoctoral Fellows and Their Subsequent Positions

Emily Elliott, Ph.D. (Postdoc 2001-2002 in Cowan lab following MU Ph.D. in Cowan lab)

(Several MU Awards and Alumnus Lecture) Professor, Louisiana State University

Michael Bunting, Ph.D. (Postdoc 2003-2005)

Assistant Dean for Research, College of Engineering and Computing and Director of Research Development for National Security, George Mason University (Winner of *APA's 2006 Young Investigator Award* for the *Journal of Experimental Psychology: Learning, Memory, and Cognition*)

Tina Miyake, Ph.D. (Postdoc 2007-2009)

Supervision shared with Jeff Rouder and Moshe Naveh-Benjamin
Visiting Assistant Professor, Idaho State University

Amanda L. Gilchrist, Ph.D. (Postdoc 2011)

Professor, Cottey College, Nevada, MO

Evie Vergauwe, Ph.D. (Postdoc 2012-2015)

Associate Professor and SNSF Eccellenza fellow at the University of Geneva, Switzerland
Postdoc funded by the Swiss National Science Foundation
(Select Speaker Award, Psychonomic Society, 2014
Rising Star Award, Association for Psychological Science, 2015)

Steven Rhodes, Ph.D., Postdoctoral Fellow supported by ESRC grant from U.K. (Postdoc 2016-2018). Former Postdoctoral Associate, Rotman Research Institute, Toronto, CA. Currently Statistician, Urology Institute, Cleveland.

Qiang Jiang, Ph.D. (Postdoc 2016-2018)

Psychological Scientist and Educator, Hui Xiu Education and Technology Co., Ltd
Shang Hai, China

Alicia Forsberg, Ph.D. (Postdoc 2019-2021) Currently Lecturer, University of Sheffield, U.K.

Equivalent of Assistant Professor in U.S.)(Women in Cognitive Science Networking Award for Junior Scientists, 2020; University of Missouri Postdoctoral Research Award, and Department of Psychological Sciences Postdoctoral Research Excellence Award, 2021; Developmental Science Early Career Researcher Prize, 2021; Journal of Intelligence Young Investigator Award, 2022.

Dominic Guitard, Ph.D., 2021, Université de Moncton, Canada (Postdoc at University of Missouri 2021-2022). Currently Lecturer, Cardiff University, U.K. (equivalent of Assistant Professor in U.S.) Dominic was a visiting student from Moncton University, Canada, Fall 2019. Postdoctoral fellow (Cowan, sponsor: Postdoctoral Fellowships from Natural Sciences and Engineering Research Council of Canada, 2021-2022). Awards: 2021 Governor General's Gold Medal from Université de Moncton for best dissertation; Academic excellence certificate from the Canadian Psychology Association. Canadian Journal of Experimental Psychology best article award of 2020. 2020 President's award from Université de Moncton for best student publication. Award for best doctoral dissertation, 2022. Editor's Choice Award for Guitard & Cowan (2023, *Journal of Experimental Psychology: Human Perception and Performance*). APS Rising Star Award, 2024.

Luísa Superbia-Guimarães, Ph.D. (2022, University of Fribourg, Switzerland; postdoc in Cowan lab at the University of Missouri 2022 until March, 2024). Beginning March, 2024, Lecturer (Assistant Professor), School of Psychology, University of Leeds, U.K.

Samsad Himi, Ph.D. Professor, Jagannath University. 2024-2025, Fulbright Scholar at the University of Missouri under the direction of Nelson Cowan.

Extramural Committee Member (+several others as reader)

Opponent, Doctoral Defense of István Winkler, University of Helsinki, Finland, June 2, 1993.

Reader, Doctoral Defense of Patrick Wilken, University of Melbourne, Australia, 2001

Committee Member, Habilitation of Valérie Camos, University of Bourgogne, Dijon, France, December 19, 2003

Doctoral Committee Member, Evie Vergauwe, University of Geneva, Switzerland, June 2010

Doctoral Committee Member, Gerly Tamm, University of Tartu, Estonia, May, 2021

Doctoral Committee Member, Luisa S. Guimaraes, University of Fribourg, Switzerland, Sept., 2022

Doctoral Committee, Béatrice Valentini, University of Geneva.

Doctoral Committee, Areej Alhamdan, LaTrobe University, Australia.