

Nelson Cowan's Publications Organized by Topic
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Note – In this document, most articles are listed only once, not under multiple categories. If you don't find what you are looking for under one category, it may be under another category. Several categories are rather diverse and a few papers only loosely fit their categories. You can also search for words or search my CV on the web page, <https://memory.psych.missouri.edu/cowan.html>, to find the most recent papers. Here, they are approximately alphabetical within each topic.

Clickable Table of Contents for Categories (cntl + mouse-click)

[**Aging Effects on Working Memory**](#)
[**Alleviating the Effects of Dense Amnesia through Minimal Interference**](#)
[**Books**](#)
[**Brain Studies of Working Memory**](#)
[**Grouping and Chunking Processes and Working Memory Capacity**](#)
[**Cocktail Party Phenomenon and Working Memory**](#)
[**Decay of Working Memory Over Time**](#)
[**Dual-task Procedures to Examine the Role of Attention in Working Memory**](#)
[**Effects of Alcohol on Working Memory**](#)
[**Information Processing, Attention, and Language**](#)
[**Latent Structure of Working Memory**](#)
[**Learning Difficulties and Disorders in Relation to Attention and Working Memory**](#)
[**Methodology**](#)
[**Processes of Working Memory Maintenance**](#)
[**Reviews of Working Memory and Its Development***](#)
[**Reviews on Information Processing**](#)
[**Typical Development of Working Memory in Childhood**](#)

[**Aging Effects on Working Memory \(Top of Document\)**](#)

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>

Cowan, N., Naveh-Benjamin, M., Kilb, A., & Saults, J.S. (2006). Life-Span development of visual working memory: When is feature binding difficult? *Developmental Psychology*, 42, 1089-1102. PMC1635970

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*. <https://doi.org/10.1177/17470218251351307>

Forsberg, A., Guitard, D., Greene, N.R., Naveh-Benjamin, M., & Cowan, N. (2022). The proportion of working memory items recoverable from long-term memory remains fixed despite adult aging. *Psychology and Aging*, 37, 777-786. <https://doi.org/10.1037/pag0000703>

Gilchrist, A.L., Cowan, N., & Naveh-Benjamin, M. (2008). Working memory capacity for spoken sentences decreases with adult ageing: Recall of fewer, but not smaller chunks in older adults. *Memory*, 16, 773-787. PMC2610466

Greene, N.R., Naveh-Benjamin, M., & Cowan, N. (2020). Adult age differences in working memory capacity: Spared central storage but deficits in ability to maximize peripheral storage. *Psychology and Aging*, 35, 866-880.

Jaroslawska, A., Rhodes, S., Belletier, C., Doherty, J., Cowan, N., Naveh-Benjamin, M., Barrouillet, P., Camos, V., & Logie, R. (2021). What affects the magnitude of age-related dual-task costs in working memory? The role of stimulus domain and access to semantic representations. *Quarterly Journal of Experimental Psychology*, 74(4), 682-704. doi: 10.1177/1747021820970744

Multhaup, K.S., Balota, D.A., & Cowan, N. (1996). Implications of aging, lexicality, and item length for the mechanisms underlying memory span. *Psychonomic Bulletin & Review*, 3, 112-120.

Naveh-Benjamin, M., Cowan, N., Kilb, A., & Chen, Z. (2007). Age-related differences in immediate serial recall: Dissociating chunk formation and capacity. *Memory & Cognition*, 35, 724-737. PMC1995413

Naveh-Benjamin, M., Kilb, A., Maddox, G., Thomas, J., Fine, H., Chen, T., & Cowan, N. (2014). Older adults don't notice their names: A new twist to a classic attention task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40, 1540-1550

Rhodes, S., Doherty, J.M., Jaroslawska, A.J., Forsberg, A., Belletier, C., Naveh-Benjamin, M., Cowan, N., Barrouillet, P., Camos, V., and Logie, R.H. (2021). Exploring the influence of temporal factors on age differences in working memory dual task costs. *Psychology and Aging*, 36(2), 200-213. doi: 10.1037/pag0000531

Rhodes, S., Parra, M.A., Cowan, N., & Logie, R.H. (2017). Healthy aging and visual working memory: The effect of mixing feature and conjunction changes. *Psychology and Aging*, 32, 354-366.

Rhodes, S., Jaroslawska, A.J., Doherty, J.M., Belletier, C., Naveh-Benjamin, M., Cowan, N., Camos, V., Barrouillet, P., & Logie, R.H. (2019). Storage and processing in working memory: Assessing dual task performance and task prioritization across the adult lifespan. *Journal of Experimental Psychology: General*, 148, 1204-1227.

Effects of Alcohol on Working Memory ([Top of Document](#))

Bartholow, B.D., Fleming, K.A., Wood, P.K., Cowan, N., Saults, J.S., Altamirano, L., Miyake, A., Martins, J., & Sher, K.J. (2018). Alcohol effects on response inhibition: Variability across tasks and individuals. *Experimental and Clinical Psychopharmacology*, 26(3), 251-267. doi: 10.1037/pha0000190

Cofresí, R.U., Watts, A.L., Martins, J.S., Wood, P.K., Sher, K.J., Cowan, N., Miyake, A., & Bartholow, B.D. (2021). Acute effect of alcohol on working memory updating. *Addiction*, 116, 3029-3043. doi: 10.1111/add.15506

Saults, J., Cowan, N., Sher, K.J., & Moreno, M.V. (2007). Differential effects of alcohol on working memory: Distinguishing multiple processes. *Experimental and Clinical Psychopharmacology*, 15, 576-587.

Alleviating the Effects of Dense Amnesia through Minimal Interference ([Top of Document](#))

Cowan, N., Beschin, N., & Della Sala, S. (2004). Verbal recall in amnesiacs under conditions of diminished retroactive interference. *Brain*, 127, 825-834.

Della Sala, S., Cowan, N., Beschin, N., & Perini, M. (2005). Just lying there, remembering: Improving recall of prose in amnesic patients with mild cognitive impairment by minimizing interference. *Memory*, 13, 435-440.

Dewar, M., Alber, J., Butler, C., Cowan, N., & Della Sala, S. (2012). Brief wakeful resting boosts new memories over the long term. *Psychological Science*, 23, 955-960.

Dewar, M., Alber, J., Cowan, N., & Della Sala, S. (2014). Boosting long-term memory via wakeful rest: Intentional rehearsal is not necessary, consolidation is sufficient. *PLOS One*, 9(10), e109542, 1-10.

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Dewar, M., Fernandez Garcia, Y., Cowan, N., & Della Sala, S. (2009). Delaying interference enhances memory consolidation in amnesic patients. *Neuropsychology*, 23, 627-634.

Dewar, M., Pesallaccia, M., Cowan, N., Provinciali, L., & Della Sala, S. (2012). Insights into spared memory capacity in amnestic MCI and Alzheimer's Disease via minimal interference. *Brain and Cognition*, 78, 189-199.

Dewar, M.T., Cowan, N., & Della Sala, S. (2007). Forgetting due to retroactive interference: A fusion of Müller

and Pilzecker's (1900) early insights into everyday forgetting and recent research on anterograde *Cortex*, 43, 616-634.

Dewar, M.T., Della Sala, S., & Cowan, N. (2010). Forgetting due to retroactive interference in amnesia: Findings and implications. In S. Della Sala, *Forgetting. Current Issues in Memory*. Psychology Press. (Pp. 185-209)

McGhee, J.D., Cowan, N., Beschin, N., Mosconi, C., & Della Sala, S. (2020). Wakeful rest benefits before and after encoding in anterograde amnesia. *Neuropsychology*, 34, 524-534.

Segura, I.A., McGhee, J., Della Sala, S., Cowan, N., & Pompéia, S. (2021). A reappraisal of acute doses of benzodiazepines as a model of anterograde amnesia. *Human Psychopharmacology: Clinical and Experimental*, 36, 3, e2774. DOI: 10.1002/hup.2774

Brain Studies of Working Memory ([Top of Document](#))

Cowan, N. (2011). The focus of attention as observed in visual working memory tasks: Making sense of competing claims. *Neuropsychologia*, 49, 1401-1406. PMC3095706

Cowan, N., Li, D., Moffitt, A., Becker, T.M., Martin, E.A., Saults, J.S., & Christ, S.E. (2011). A neural region of abstract working memory. *Journal of Cognitive Neuroscience*, 23, 2852-2863. PMC3138911

Cowan, N., Winkler, I., Teder, W., & Näätänen, R. (1993). Memory prerequisites of the mismatch negativity in the auditory event-related potential (ERP). *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 19, 909-921.

Gossaries, O., Yu, Q., LaRocque, J.J., Starrett, M.J., Rose, N.S., Cowan, N., & Postle, B.R. (2018). Parietal-occipital interactions underlying control- and representation-related processes in working memory for nonspatial visual features. *Journal of Neuroscience*, 38, 4357–4366.

Li, D., Christ, S.E., & Cowan, N. (2014). Domain-general and domain-specific functional networks in working memory. *Neuroimage*, 102, 646-656.

Majerus, S., Cowan, N., Péters, F., Van Calster, L., Phillips, C., & Schrouff, J. (2016). Cross-modal decoding of neural patterns associated with working memory: Evidence for attention-based accounts of working memory. *Cerebral Cortex*, 26, 166-179.

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Rinne, T., Gratton, G., Fabiani, M., Cowan, N., Maclin, E., Stinard, A., Sinkkonen, J., Alho, K., & Näätänen, R. (1999). Scalp-recorded optical signals make sound processing in the auditory cortex visible. *Neuroimage*, 10, 620-624.

Ritter, W., Gomes, H., Cowan, N., Sussman, E., & Vaughan, H.G., Jr. (1998). Reactivation of a dormant representation of an auditory stimulus feature. *Journal of Cognitive Neuroscience*, 10, 605-614.

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Winkler, I., Schröger, E., & Cowan, N. (2001). The role of large-scale memory organization in the mismatch negativity event-related brain potential. *Journal of Cognitive Neuroscience*, 13, 59-71.

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Chekaf, M., Cowan, N., & Mathy, F. (2016). Chunk formation in immediate memory and how it relates to data compression. *Cognition*, 155, 96-107.

Chen, Z., & Cowan, N. (2009). Core verbal working memory capacity: The limit in words retained without covert articulation. *Quarterly Journal of Experimental Psychology*, 62, 1420-1429. PMC2693080

Chen, Z., & Cowan, N. (2005). Chunk limits and length limits in immediate recall: A reconciliation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 31, 1235-1249.

Cowan, N., & Chen, Z. (2009). How chunks form in long-term memory and affect short-term memory limits. In M. Page & A. Thorn (Eds.), *Interactions between short-term and long-term memory in the verbal domain* (pp. 86-107). Hove, UK: Psychology Press.

Cowan, N., Chen, Z., & Rouder, J.N. (2004). Constant capacity in an immediate serial-recall task: A logical sequel to Miller (1956). *Psychological Science*, 15, 634-640.

Cowan, N., & Elliott, E.M. (2023). Deconfounding serial recall: Response timing and the overarching role of grouping. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 49, 249-268. <http://dx.doi.org/10.1037/xlm0001157>

Cowan, N., & Hardman, K.O. (2021). Immediate recall of grouped serial numbers with or without multiple item repetitions. *Memory*, 29(6), 744-761 doi.org/10.1080/09658211.2021.1942920

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Guitard, D., Saint-Aubin, J., & Cowan, N. (2022). Grouping effects in immediate reconstruction of order and the preconditions for long-term learning. *Quarterly Journal of Experimental Psychology*, 75, 70-97.

Lazartigues, L., Lavigne, F., Aguilar, C., Cowan, N., & Mathy, F. (2021). Benefits and pitfalls of data compression in visual working memory. *Attention, Perception, and Psychophysics*, 83, 2843-2864. <https://doi.org/10.3758/s13414-021-02333-x>

Mathy, F., Chekaf, M. & Cowan, N., (2018). Simple and complex working memory tasks allow similar benefits of information compression. *Journal of Cognition*. 1(1), 31. DOI: <http://doi.org/10.5334/joc.31>

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Naveh-Benjamin, M., Kilb, A., Maddox, G., Thomas, J., Fine, H., Chen, T., & Cowan, N. (2014). Older adults don't notice their names: A new twist to a classic attention task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40, 1540-1550

Röer, J.P., & Cowan, N. (2021). A preregistered replication and extension of the cocktail party phenomenon: One's name captures attention, unexpected words do not. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 47, 234-242. <https://doi.org/10.1037/xlm0000874>

Wood, N., & Cowan, N. (1995). The cocktail party phenomenon revisited: Attention and memory in the classic selective listening procedure of Cherry (1953). *Journal of Experimental Psychology: General*, 124, 243-262.

Wood, N., & Cowan, N. (1995). The cocktail party phenomenon revisited: How frequent are attention shifts to one's name in an irrelevant auditory channel? *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 21, 255-260.

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Cowan, N., & AuBuchon, A.M. (2008). Short-term memory loss over time without retroactive stimulus

interference. *Psychonomic Bulletin & Review*, 15, 230-235. PMC2662695

Cowan, N., Lichtry, W., & Grove, T.R. (1990). Properties of memory for unattended spoken syllables. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 16, 258-269.

Cowan, N., Nugent, L.D., Elliott, E.M., & Saults, J.S. (2000). Persistence of memory for ignored lists of digits: Areas of developmental constancy and change. *Journal of Experimental Child Psychology*, 76, 151-172.

Cowan, N., Saults, J.S., & Nugent, L.D. (1997). The role of absolute and relative amounts of time in forgetting within immediate memory: The case of tone pitch comparisons. *Psychonomic Bulletin & Review*, 4, 393-397. <http://www.psychonomic.org/psp/publications-resources.html>

Cowan, N., Saults, J.S., & Nugent, L. (2001). The ravages of absolute and relative amounts of time on memory. In H.L. Roediger III, J.S. Nairne, I. Neath, & A. Surprenant (eds.), *The nature of remembering: Essays in honor of Robert G. Crowder*. Washington, D.C.: American Psychological Association. (pp. 315 - 330)

Ricker, T.J., & Cowan, N. (2010). Loss of visual working memory within seconds: The combined use of refreshable and non-refreshable features. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 36, 1355-1368. PMCID: PMC2970679

Ricker, T.J., Sandry, J., Vergauwe, E., & Cowan, N. (2020). Do familiar memory items decay? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 46, 60-76

Ricker, T.J., Spiegel, L.R., & Cowan, N. (2014). Time-based loss in visual short-term memory is from trace decay, not temporal distinctiveness. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40, 1510-1523.

Ricker, T.J., Vergauwe, E., & Cowan, N. (2016). Decay theory of immediate memory: From Brown (1958) to today (2014). *Quarterly Journal of Experimental Psychology*, 69, 1969-1995.

Typical Development of Working Memory in Childhood ([Top of Document](#))

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Braine, M.D.S., Brooks, P.J., Cowan, N., Samuels, M.C., & Tamis-LeMonda, C. (1993). The Development of categories at the semantics/syntax interface. *Cognitive Development*, 8, 465-494.

Brunner, R., & Cowan, N. (2000). The role of attention in the development of working memory. *McNair Journal*, Fall, 2000.

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Cowan, N. (1998). Children's memories according to fuzzy-trace theory: An endorsement of the theory's purpose and some suggestions to improve its application. *Journal of Experimental Child Psychology*, 71, 144-154.

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Cowan, N. (2002). Experimental psychology and its implications for human development. *Encyclopedia of*

Life Support Systems (EOLSS). Oxford, U.K. [<http://www.eolss.net>]

Cowan, N. (2014). Working memory underpins cognitive development, learning, and education. *Educational Psychology Review*, 26, 197-223. DOI: 10.1007/s10648-013-9246-y.

Cowan, N. (1997). The development of working memory. In N. Cowan (ed.), *The development of memory in childhood*. Hove, East Sussex, UK: Psychology Press.

Cowan, N. (1999). The differential maturation of two processing rates related to digit span. *Journal of Experimental Child Psychology*, 72, 193-209.

Cowan, N. (2002). Childhood development of working memory: An examination of two basic parameters. In P. Graf and N. Ohta, *Lifespan development of human memory*. Cambridge, MA: MIT Press. (pp. 39 – 57)

Cowan, N. (2003). Comparisons of developmental modeling frameworks and levels of analysis in cognition: Connectionist and dynamic systems theories deserve attention, but don't yet explain attention. In J.P. Spencer & E. Thelen (Eds.) (2002). Connectionism and dynamic systems approaches to development. [Special issue] *Developmental Science*, 6, 440-447.

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