

Joshua D. Koen

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Academic Positions

2018 – Present **Assistant Professor**, Department of Psychology, University of Notre Dame
2017 – 2018 **Research Scientist**, Center for Vital Longevity, University of Texas at Dallas
2013 – 2017 **Research Associate**, Center for Vital Longevity, University of Texas at Dallas

Education

2013 – 2018 **Postdoctoral Fellowship**, University of Texas at Dallas
2008 – 2013 **Ph.D. and M.S.**, University of California, Davis
2003 – 2007 **B.S.**, University of Texas, Arlington

Grants and Awards

2019 Science of Wellness Initiative Catalyst Seed Grant (University of Notre Dame)
2017 – 2018 Aging Mind Foundation of Dallas Postdoctoral Fellowship
2014 – 2017 Ruth L. Kirschstein National Research Service Award (National Institute on Aging)
2016 Kavli Summer Institute in Cognitive Neuroscience Fellow
2010 – 2013 National Science Foundation Graduate Research Fellowship

Peer-Reviewed Publications

- Koen, J.D.**, Hauck, N., & Rugg, M.D. (2019). The relationship between age, neural differentiation, and episodic memory. *Journal of Neuroscience*, *39* (1), 149-162. [\[bioRxiv\]](#) [\[PubMed\]](#)
- Koen, J.D.**, Thakral, P., & Rugg, M.D. (2018). Transcranial magnetic stimulation of the left angular gyrus during encoding does not impair associative memory performance. *Cognitive Neuroscience*, *9* (3-4), 127-138. [\[PubMed\]](#)
- Koen, J.D.**, Horne, E.D., Hauck, N., & Rugg, M.D. (2018). Age-related differences in prestimulus subsequent memory effects assessed with event-related potentials. *Journal of Cognitive Neuroscience*, *6*, 829-850. [\[bioRxiv\]](#) [\[PubMed\]](#)
- Koen, J.D.**, Borders A.A., Petzold, M.T., & Yonelinas, A.P. (2017). Visual short-term memory for high-resolution associations is impaired in patients with medial temporal lobe damage. *Hippocampus*, *27* (2), 194-193. [\[PubMed\]](#)
- Koen, J.D.**, Barrett, F.S., Harlow, I.M., & Yonelinas, A.P. (2017). The ROC Toolbox: A toolbox for analyzing receiver-operating characteristics derived from confidence ratings. *Behavior Research Methods*, *49* (4), 1399-1406. doi:10.3758/s13428-016-0796-z. [\[PubMed\]](#)
- Koen, J.D.**, & Rugg, M.D. (2016). Memory reactivation predicts resistance to retroactive interference: Evidence from multivariate classification and pattern similarity analyses. *Journal of Neuroscience*, *36* (15), 4389-4399. [\[PubMed\]](#)
- Koen, J.D.**, & Yonelinas, A.P. (2016). Recollection, not familiarity, decreases in healthy aging: Converging evidence from four estimation methods. *Memory*, *24* (1), 75-88. [\[PubMed\]](#)
- Koen, J.D.**, & Yonelinas, A.P. (2014). Recollection and familiarity in healthy aging, amnesic Mild Cognitive Impairment, and Alzheimer's disease: A meta-analytic review. *Neuropsychology Review*, *24* (3), 332-354. [\[PubMed\]](#)

- Koen, J.D.**, Aly, M., Wang, W.C., & Yonelinas, A.P. (2013). Examining the causes of memory strength variability: Recollection, attention failure, or encoding variability? *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *39* (6), 1726-1741. [\[PubMed\]](#)
- Koen, J.D.**, & Yonelinas, A.P. (2013). Still no evidence for the encoding variability hypothesis: A reply to Jang, Mickes, & Wixted (2012) and Starns, Rotello, & Ratcliff (2012). *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *39* (1), 304-312. [\[PubMed\]](#)
- Koen, J.D.**, & Yonelinas, A.P. (2011). From humans to rats and back again: Bridging the divide between human and animal studies of recognition memory with receiver operating characteristics. *Learning & Memory*, *18* (8), 519-522. [\[PubMed\]](#)
- Yonelinas, A.P., Parks, C.M., **Koen, J.D.**, Jorgenson, J., & Mendoza, S.P. (2011). The effects of post-encoding stress on recognition memory: Examining the impact of skydiving in young men and women. *Stress*, *14* (2), 136-144. [\[PubMed\]](#)
- Koen, J.D.**, & Yonelinas, A.P. (2010). Memory variability is due to the contribution of recollection and familiarity, not to encoding variability. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *36* (6), 1536-1542. [\[PubMed\]](#)
- Yonelinas, A.P., Aly, M., Wang, W.C., & **Koen, J.D.** (2010). Recollection and familiarity: Examining controversial assumptions and new directions. *Hippocampus*, *20* (11), 1178-1194. [\[PubMed\]](#)
- Odegard, T.N., Jenkins, K.M., & **Koen, J.D.** (2010). Developmental differences in the use of recognition memory rejection mechanisms. *Developmental Psychology*, *46* (3), 691-698. [\[PubMed\]](#)
- Odegard, T.N., **Koen, J.D.**, & Gama, J.M. (2008). Process demands of rejection mechanisms of recognition memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *34* (5), 1296-1304. [\[PubMed\]](#)
- Odegard, T.N., & **Koen, J.D.** (2007). "None-of-the-above" as a correct and incorrect alternative on a multiple-choice test: Implications for the testing effect. *Memory*, *15* (8), 873-885. [\[PubMed\]](#)

Manuscript Under Review/In Preparation

- Koen, J.D.**, & Rugg (in revision). Neural dedifferentiation in the aging brain.
- Koen, J.D.**, Hauck, N., & Rugg, M.D. (in preparation). fMRI evidence for an own-age bias associated with passively viewing faces.
- Horne, E.D., **Koen, J.D.**, Hauck, N., & Rugg, M.D. (in preparation). Age differences in ERP correlates of subjective recollection and source memory.

Invited Talks

- Neural differentiation and memory performance in young and older adults. (2019, January) *Talk to be presented at the Dallas Aging and Cognition Conference, Dallas, TX.*
- The relationship between age, neural dedifferentiation, and memory encoding. *Talk presented at the 25th annual meeting of Cognitive Neuroscience Society, Boston, MA.*
- Age, memory, and cortical specialization. (2018, May). *Center for Vital Longevity Science Advisory Council Research Spotlight at the University of Texas at Dallas, Dallas, TX.*
- MVPA is not a panacea for cognitive neuroscience: Issues with feature selection and cerebrovascular reactivity. (2016, October). *Center for Vital Longevity Science Luncheon Series at the University of Texas at Dallas, Dallas, TX.*
- Memory encoding and memory interference: An fMRI study. (2015, February). *Invited talk presented at the Center for Vital Longevity Science Luncheon Series at the University of Texas at Dallas, Dallas, TX.*

Conference Presentations

- Koen, J.D.**, Hauck, N., & Rugg, M.D. (2019, March). An own-age bias in the hippocampus in young and older adults. *Poster to be presented at the 26th annual meeting of Cognitive Neuroscience Society, San Francisco, CA.*

- Srokova, S., Hill, P.F., **Koen, J.D.**, King, D.R., & Rugg, M.D. (2019, March). Neural differentiation at encoding predicts subsequent source memory performance in young and older adults. *Poster to be presented at the 26th annual meeting of Cognitive Neuroscience Society, San Francisco, CA.*
- Song, E., **Koen, J.D.**, & Rugg, M.D. (2019, March). Successful encoding of item and source information is predicted by graded neural activity. *Poster to be presented at the 26th annual meeting of Cognitive Neuroscience Society, San Francisco, CA.*
- Nguyen, K., Hauck, N., Horne, E.D., **Koen, J.D.**, & Rugg, M.D. (2019, January). Prestimulus subsequent memory effects: An EEG time frequency-analysis in young and older adults. *Poster to be presented at the Dallas Aging and Cognition Conference, Dallas, TX.*
- Koen, J.D.**, Hauck, N., & Rugg, M.D. (2018, November). Neural pattern similarity during encoding tracks subsequent memory in young, but not older, adults. *Poster presented at the 48th annual meeting of the Society for Neuroscience, San Diego, CA.*
- Koen, J.D.**, Hauck, N., & Rugg, M.D. (2018, May). Own-age biases in the neural correlates of passively viewing faces. *Poster presented at the Cognitive Aging Conference, Atlanta, GA.*
- Koen, J.D.**, Hauck, N., & Rugg, M.D. (2018, March). The relationship between age, neural dedifferentiation, and memory encoding. *Talk presented at the 25th annual meeting of Cognitive Neuroscience Society, Boston, MA.* (Chair and Organizer of Symposium)
- Koen, J.D.**, Hauck, N., & Rugg, M.D. (2017, November). Neural differentiation during encoding predicts subsequent memory independent of age. *Talk presented at the 47th annual meeting of the Society for Neuroscience, Washington, D.C.* (Chair and Organizer of Nanosymposium)
- Hauck, N., **Koen, J.D.**, & Rugg (2017, November). Age differences in prestimulus subsequent memory effects: A time-frequency analysis. *Poster presented at the 47th annual meeting of the Society for Neuroscience, Washington, D.C.*
- Horne, E.D., **Koen, J.D.**, & Rugg (2017, November). Age differences in ERP correlates of subjective recollection and source memory. *Poster presented at the 47th annual meeting of the Society for Neuroscience, Washington, D.C.*
- Koen, J.D.**, Horne, E.D., Hauck, N., & Rugg, M.D. (2017, March). Age differences in pre-stimulus subsequent memory effects: an event-related potential study. *Poster presented at the 23rd annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.*
- Horne, E.D., **Koen, J.D.**, Hauck, N., & Rugg, M.D. (2017, March). Age differences in event-related potential effects associated with strong and weak recollection. *Poster presented at the 23rd annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.*
- Koen, J.D.**, Horne, E.D., Hauck, N., & Rugg, M.D. (2017, January). Pre-stimulus subsequent memory effects in healthy young and older adults. *Poster presented at the 5th biennial Dallas Aging & Cognition Conference, Dallas, TX.*
- Koen, J.D.**, Lewis, L.J, Ivleva, E.I., Clementz, B.A., Lu, H., Sweeney, J.A., Pearlson, G.D., Keshavan, M.S., Rugg, M.D., Tamminga, C.A. (2016, November). Classification of DSM- and Biotype-derived categories of psychosis from regional gray matter density: A machine learning approach. *Poster presented at the 46th annual meeting of the Society of Neuroscience, San Diego, CA.*
- Wong, J.X., **Koen, J.D.**, Lewis, L.J., & Rugg, M.D. (2016, November). Comparison of the ERP correlates of encoding item-item and item-context associations. *Poster presented at the 46th annual meeting of the Society of Neuroscience, San Diego, CA.*
- Koen, J.D.**, & Rugg, M.D. (2016, August). Feature selection and MVPA. *Talk presented at the Dallas and Austin Area Memory Meeting, Dallas, TX.*
- Koen, J.D.**, Borders, A.A., Petzold, M.T., & Yonelinas, A.P. (2016, July). Medial temporal lobe damage impairs short-term memory for high resolution associations. *Poster presented at the International Conference on Memory, Budapest, Hungary.*
- Koen, J.D.**, & Rugg, M.D. (2016, April). Feature selection prior to classification based MVPA: Univariate analysis is not always optimal. *Poster presented at the 23rd annual meeting of the Cognitive Neuroscience Society, New York, NY.*

- Koen, J.D.**, & Rugg, M.D. (2015, March). Specific and general memory reactivation helps overcome retroactive interference in the AB/AC paradigm. *Poster presented at the 22nd annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.*
- Koen, J.D.**, & Rugg, M.D. (2014, November). Neural correlates during memory encoding associated with resistance to retroactive interference. *Poster presented at the 44th annual meeting of the Society for Neuroscience, Washington, DC.*
- Koen, J.D.**, & Yonelinas, A.P. (2013, April). Recollection and familiarity declines in healthy aging, aMCI, and AD. *Poster presented at the 20th annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.*
- Leitman, D.I., Yonelinas, A.P., Chan, C., **Koen, J.D.**, Brensing, C.M., Hansen, J., Richard, J., Calkins, M.E., Gur, R. E., & Gur, R. C. (2012, May). Remembrance of things past: The role of item familiarity and recollection of circumstance in schizophrenia delayed recall memory performance. *Poster presented at the 67th annual meeting of the Society of Biological Psychiatry, Philadelphia, PA.*
- Koen, J.D.**, Aly, M., Wang, W.C., Kroll, N.E.A., & Yonelinas, A.P. (2011, November). The necessity of theoretical validity in signal-detection models of recognition memory. *Poster presented at the 52nd annual meeting of the Psychonomic Society, Seattle, WA.*
- Koen, J. D.**, Yonelinas, A.P., Parks, C.M., Aly, M., & Ranganath, C.R. (2010, November). Medial temporal lobe contributions to encoding novel cross modal associations: An examination of temporal discontinuity. *Talk presented at the 40th annual meeting of the Society for Neuroscience, San Diego, CA.*
- Cooper, C. M., Farris, E. A., **Koen, J. D.**, Bartlett, J. C., & Odegard, T. N. (2009, May). Role of the left hippocampus and left inferior parietal network in successful recollection of names. *Poster presented at the 21st annual convention of the Association for Psychological Science, San Francisco, CA.*
- Farris, E.A., **Koen, J.D.**, Douglas, A., Wilson, M.M., Wood, H.F., & Odegard, T.N. (2009, November). Reappearance of the positive testing effect through the provision of feedback on items where none-of-the-above is the correct response. *Poster presented at the 50th annual meeting of the Psychonomic Society, Boston, MD.*
- Koen, J. D.**, Cooper, C. M., Jenkins, K. J., Odegard, T. N., Bartlett, J. C. (2009, May). The neural correlates at encoding that predict cued-recall of associative information. *Poster presented at the 21st annual convention of the Association for Psychological Science, San Francisco, CA.*
- Koen, J. D.**, & Yonelinas, A. P. (2009, November). Memory related increases in variance are due to recollection rather than encoding variability. *Poster presented at the 50th annual meeting of the Psychonomic Society, Boston, MD.*
- Koen, J. D.**, & Yonelinas, A. P. (2009, August). The contribution of recollection, not encoding variability, better explains memory related increases in variance. *Poster presented at the 6th annual Bay Area Memory Meeting, San Francisco, CA.*
- Jenkins, K. M., **Koen, J. D.**, & Odegard, T. N. (2008, May). Using plausibility judgments to improve recognition memory performance. *Poster presented at the 20th annual convention of the Association for Psychological Science, Chicago, IL.*
- Koen, J. D.**, Gama, J. M., Odegard, T. N. (2008, May). Differential processing demand requirements for recollection rejection, plausibility judgments, and novelty detection. *Poster presented at the 20th annual convention of the Association for Psychological Science, Chicago, IL.*
- Koen, J. D.**, & Odegard, T. N. (2007, March). “None-of-the-above” as a correct alternative eliminates the testing effect. *Talk presented at the Annual Celebration of Excellence by Students (ACES) at the University of Texas at Arlington, Arlington, TX.*

Teaching Experience

Spring 2019	Cognitive Aging (PSY 33528)
Fall 2018	Cognitive Neuroscience of Memory and Aging (PSY 43528/63528)
Fall 2017	Organizer and Instructor , MATLAB Programming Bootcamp

Fall 2017	Guest Lecture , Cognitive Neuroscience of Memory
Fall 2016	Guest Lecture , Cognitive Neuroscience of Memory
Winter 2010	Teaching Assistant , Human Learning
Spring 2009	Teaching Assistant , Developmental Psychology
Fall 2008	Teaching Assistant , Human Learning

Open Source Software

ROC Toolbox [[GitHub](#)]

Professional Society Memberships

Cognitive Neuroscience Society
Society for Neuroscience
Psychonomic Society

Ad Hoc Reviewer

American Journal of Psychiatry
American Journal of Psychology
Cerebral Cortex
Cognitive Neuroscience
Journal of Educational Psychology
Journal of Experimental Psychology: Learning, Memory, & Cognition
Journal of the International Neuropsychological Society
Journal of Memory and Language
Journal of Neuroscience
Memory
Memory & Cognition
Neurobiology of Aging
NeuroImage
Neuropsychologia
Psychology & Aging
Psychonomic Bulletin & Review
Scientific Reports