

Shana K. Carpenter

Curriculum Vitae

May, 2022

CONTACT INFORMATION:

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EDUCATION:

Ph.D. (2004), Cognitive psychology, Colorado State University, Fort Collins, CO.
M. S. (2003), Cognitive psychology, Colorado State University, Fort Collins, CO.
B. A. (2000), Experimental psychology, University of Southern Colorado, Pueblo, CO.

PROFESSIONAL EXPERIENCE:

- Professor, Department of Psychology, Iowa State University (2021 - present)
- Associate Professor, Department of Psychology, Iowa State University (2014 - 2021)
- Assistant Professor, Department of Psychology, Iowa State University (2008 - 2014)
- Assistant Project Scientist, University of California, San Diego (2007 - 2008)
- Postdoc, Department of Psychology, University of California, San Diego (2005 - 2007)

HONORS AND AWARDS:

- Association for Psychological Science (APS) *Rising Star* Award (2012)
- Iowa State University Department of Psychology Award for Outstanding Success in Extramural Funding (2017)
- Iowa State University Kentner-Fritz Award for Outstanding Research Productivity (2015)
- Iowa State University Award for Excellence in Honors Teaching (2011)
- Iowa State University Department of Psychology Award for Early Career Excellence in Research (2010)

FUNDED GRANTS:

Principal Investigator (Co-Investigators Andrew C. Butler, Jeffrey D. Karpicke, David Miele, Timothy Nokes-Malach, Uma Tauber), "Implementing Principles from the Science of Learning within Educational Practice." Collaborative Activity Award funded by the James S. McDonnell Foundation (\$4,635,718.00), 2016-2023.

Principal Investigator (Co-PIs Clark Coffman, Monica Lamm, Patrick Armstrong, Robert Reason), "Using Retrieval Practice to Enhance Achievement in STEM Courses." Proposal funded by the National Science Foundation (\$247,109.00), 2015-2018.

Principal Investigator (Co-PI Veronica Dark), "Exploring the Optimal Placement of Practice Questions for Enhancing Student Learning." Seed Grant funded by the Iowa State University College of Liberal Arts and Sciences (\$8000.00), 2015-2016.

Principal Investigator, "Implementing Retrieval-Based Interventions to Enhance Achievement in STEM Courses." Small Grant funded by the Iowa State University Department of Psychology (\$3852.00), 2015.

PUBLICATIONS:

(graduate student/postdoc author, undergraduate student author)

Carpenter, S. K., Pan, S. C., & Butler, A. C. (accepted pending minor revision). The science of effective learning: Spacing, retrieval, and the metacognition of strategy use. *Nature Reviews Psychology*.

Corral, D., & **Carpenter, S. K.** (in press). Long-term hypercorrection, return errors, and the transfer of learning in the classroom. *Journal of Applied Research in Memory & Cognition*.

Northern, P. E., Tauber, S. K., St. Hilaire, K. J., & **Carpenter, S. K.** (in press). Application of a two-phase model of note quality to explore the impact of instructor fluency on students' note-taking. *Journal of Applied Research in Memory & Cognition*.

Carpenter, S. K. (in press). Optimizing learning through retrieval practice and spacing. In R. Tierney, F. Rizvi, & K. Ercikan (Eds.), *International Encyclopedia of Education*. Elsevier.

Witherby, A. E., & **Carpenter, S. K.** (in press). The impact of lecture fluency and technology fluency on students' online learning and evaluations of instructors. *Journal of Applied Research in Memory & Cognition*.

Carpenter, S. K., King-Shepard, Q., & Nokes-Malach, T. J. (in press). The prequestion effect: Why it is useful to ask students questions before they learn. In C. Overson, C. Hakala, L. Kordonowy, & V. Benassi (Eds.) *In their own words: What scholars want you to know about why and how to apply the science of learning in your academic setting*. American Psychological Association.

Witherby, A. E., & **Carpenter, S. K.** (in press). The rich-get-richer effect: Prior knowledge predicts new learning of domain-relevant information. *Journal of Experimental Psychology: Learning, Memory, & Cognition*.

Kelly, J. W., Lim, A. F., & **Carpenter, S. K.** (2022). Turn-by-turn route guidance does not impair route learning. *Journal of Applied Research in Memory & Cognition*, 11, 76-84.

Yeung, K. L., **Carpenter, S. K.**, & Corral, D. (2021). A comprehensive review of educational technology on objective learning outcomes in academic contexts. *Educational Psychology Review*, 33, 1583-1630.

Carpenter, S. K. (2021). Distributed practice/spacing effect. In Li-fang Zhang (Ed.), *Oxford Research Encyclopedia of Education*. Oxford University Press.

Corral, D., **Carpenter, S. K.**, & Clingan-Siverly, S. (2021). The effects of immediate vs. delayed explanatory feedback on complex concept learning. *Quarterly Journal of Experimental Psychology*, 74, 786-799.

de Bruin, A. B. H., Roelle, J., **Carpenter, S. K.**, & Baars, M. (2020). Synthesizing cognitive load and self-regulation theory: A theoretical framework and research agenda. *Educational Psychology Review*, 32, 903-915.

Carpenter, S. K., Endres, T., & Hui, L. (2020). Students' use of retrieval in self-regulated learning: Implications for monitoring and regulating effortful learning experiences. *Educational Psychology Review*, 32, 1029-1054.

- St. Hilaire, K. J., & **Carpenter, S. K.** (2020). Prequestions enhance learning, but only when they are remembered. *Journal of Experimental Psychology: Applied*, 26, 705-716.
- Corral, D., & **Carpenter, S. K.** (2020). Facilitating transfer through incorrect examples and explanatory feedback. *Quarterly Journal of Experimental Psychology*, 73, 1340-1359.
- Carpenter, S. K.**, Witherby, A. E., & Tauber, S. K. (2020). On students' (mis)judgments of learning and teaching effectiveness: Where we stand and how to move forward. *Journal of Applied Research in Memory & Cognition*, 9, 181-185.
- Carpenter, S. K.**, Witherby, A. E., & Tauber, S. K. (2020). On students' (mis)judgments of learning and teaching effectiveness. *Journal of Applied Research in Memory & Cognition*, 9, 137-151.
- Corral, D., **Carpenter, S. K.**, Perkins, K., & Gentile, D. (2020). Assessing students' use of optional online lecture reviews. *Applied Cognitive Psychology*, 34, 318-329.
- Carpenter, S. K.**, & Geller, J. (2020). Is a picture really worth a thousand words? Evaluating contributions of fluency and analytic processing in metacognitive judgments for pictures in foreign language vocabulary learning. *Quarterly Journal of Experimental Psychology*, 73, 211-224.
- Carpenter, S. K.**, Northern, P. E., Tauber, S. K., & Toftness, A. R. (2020). Effects of lecture fluency and instructor experience on students' judgments of learning, test scores, and evaluations of instructors. *Journal of Experimental Psychology: Applied*, 26, 26-39.
- St. Hilaire, K. J., **Carpenter, S. K.**, & Jennings, J. (2019). Using prequestions to enhance learning from reading passages: The roles of question type and structure building ability. *Memory*, 27, 1204-1213.
- Toftness, A. R., **Carpenter, S. K.**, Lauber, S., & Mickes, L. (2018). The limited effects of prequestions on learning from authentic lecture videos. *Journal of Applied Research in Memory & Cognition*, 7, 370-378.
- Geller, J., Still, M., Dark, V. J., & **Carpenter, S. K.** (2018). Would disfluency by any other name still be disfluent? Examining the disfluency effect with cursive handwriting. *Memory & Cognition*, 46, 1109-1126.
- Carpenter, S. K.**, Haynes, C. L., Corral, D., & Yeung, K. L. (2018). Hypercorrection of high confidence errors in the classroom. *Memory*, 26, 1379-1384.
- Carpenter, S. K.**, Rahman, S., & Perkins, K. (2018). The effects of prequestions on classroom learning. *Journal of Experimental Psychology: Applied*, 24, 34-42.
- Geller, J., Toftness, A. R., Armstrong, P. I., **Carpenter, S. K.**, Manz, C. L., Coffman, C. R., & Lamm, M. H. (2018). Study strategies and beliefs about learning as a function of academic achievement and achievement goals. *Memory*, 26, 683-690.
- Toftness, A. R., **Carpenter, S. K.**, Geller, J., Lauber, S., Johnson, M., & Armstrong, P. I. (2018). Instructor fluency leads to higher confidence in learning, but not better learning. *Metacognition & Learning*, 13, 1-14.
- Carpenter, S. K.** (2017). Spacing effects in learning and memory. In J. T. Wixted (Ed.), *Cognitive Psychology of Memory, Vol. 2 Learning and Memory: A Comprehensive Reference, 2nd edition*, J. H. Byrne (Ed.), pp. 465-485. Oxford: Academic Press.

- Geller, J., **Carpenter, S. K.**, Lamm, M. H., Rahman, S., Armstrong, P. I., & Coffman, C. R. (2017). Prequestions do not enhance the benefits of retrieval in a STEM classroom. *Cognitive Research: Principles & Implications*, 2:42.
- Carpenter, S. K.**, Rahman, S., Lund, T. J. S., Armstrong, P. I., Lamm, M. H., Reason, R. D., & Coffman, C. R. (2017). Students' use of optional online reviews and their relationship to summative assessment outcomes in introductory biology. *CBE Life Sciences Education*, 16, 1-9.
- Carpenter, S. K.**, & Toftness, A. R. (2017). The effect of prequestions on learning from video presentations. *Journal of Applied Research in Memory & Cognition*, 6, 104-109.
- Endres, T., **Carpenter, S. K.**, Martin, A., & Renkl, A. (2017). Enhancing learning by retrieval: Enriching free recall with elaborative prompting. *Learning & Instruction*, 49, 13-20.
- Carpenter, S. K.**, & Yeung, K. L. (2017). The role of mediator strength in learning from retrieval. *Journal of Memory & Language*, 92, 128-141.
- Carpenter, S. K.**, Mickes, L., Rahman, S., & Fernandez, C. S. (2016). The effect of instructor fluency on students' perceptions of instructors, confidence in learning, and actual learning. *Journal of Experimental Psychology: Applied*, 22, 161-172.
- Carpenter, S. K.**, Lund, T. J. S., Coffman, C. R., Armstrong, P. I., Lamm, M. H., & Reason, R. D. (2016). A classroom study on the relationship between student achievement and retrieval-enhanced learning. *Educational Psychology Review*, 28, 353-375.
- Kelly, J. W., **Carpenter, S. K.**, & Sjölund, L. A. (2015). Retrieval enhances route knowledge acquisition, but only when movement errors are prevented. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 41, 1540-1547.
- Rawson, K. A., Vaughn, K. E., & **Carpenter, S. K.** (2015). Does the benefit of testing depend on lag, and if so why? Evaluating the elaborative retrieval hypothesis. *Memory & Cognition*, 43, 619-633.
- Butler, A. C., & **Carpenter, S. K.** (2015). Separating myth from reality in education: Introduction to the special issue. *Educational Psychology Review*, 27, 563-565.
- Mullaney, K. M., **Carpenter, S. K.**, Grotenhuis, C., & Burianek, S. (2014). Waiting for feedback helps if you want to know the answer: The role of curiosity in the delay-of-feedback benefit. *Memory & Cognition*, 42, 1273-1284.
- Carpenter, S. K.** (2014). Enhancing student learning in low-maintenance and cost-effective ways. *Journal of Applied Research in Memory & Cognition*, 3, 121-123.
- Carpenter, S. K.** (2014). Spacing and interleaving of study and practice. In V. A. Benassi, C. E. Overson, & C. M. Hakala (Eds.), *Applying the science of learning in education: Infusing psychological science into the curriculum* (pp. 131-141). American Psychological Association.
- Carpenter, S. K.**, Wilford, M., Kornell, N., & Mullaney, K. M. (2013). Appearances can be deceiving: Instructor fluency increases perceptions of learning without increasing actual learning. *Psychonomic Bulletin & Review*, 20, 1350-1356.

- Carpenter, S. K., & Mueller, F. E.** (2013). The effects of interleaving vs. blocking on foreign language pronunciation learning. *Memory & Cognition*, 41, 671-682.
- Carpenter, S. K., Lohse, K. R., Healy, A. F., Bourne, L. E. Jr., & Clegg, B. A.** (2013). External focus of attention improves performance in a speeded aiming task. *Journal of Applied Research in Memory & Cognition*, 2, 14-19.
- Carpenter, S. K., & Kelly, J. W.** (2012). Tests enhance retention and transfer of spatial learning. *Psychonomic Bulletin & Review*, 19, 443-448.
- Carpenter, S. K., Sachs, R. E., Martin, B., Schmidt, K., & Looft, R.** (2012). Learning new vocabulary in German: The effects of inferring word meanings, type of feedback, and time of test. *Psychonomic Bulletin & Review*, 19, 81-86.
- Carpenter, S. K., & Olson, K. M.** (2012). Are pictures good for learning new vocabulary in a foreign language? Only if you think they are not. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 38, 92-101.
- Carpenter, S. K.** (2012). Testing enhances the transfer of learning. *Current Directions in Psychological Science*, 21, 279-283.
- Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H. K., & Pashler, H.** (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. *Educational Psychology Review*, 24, 369-378.
- Carpenter, S. K.** (2012). Effects of testing on learning. In N. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 1095-1097). New York: Springer.
- Carpenter, S. K.** (2011). Semantic information activated during retrieval contributes to later retention: Support for the mediator effectiveness hypothesis of the testing effect. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 37, 1547-1552.
- Carpenter, S. K., & Vul, E.** (2011). Delaying feedback by three seconds benefits retention of face-name pairs: The role of active anticipatory processing. *Memory & Cognition*, 39, 1211-1221.
- Kang, S. H. K., Pashler, H., Cepeda, N. J., Rohrer, D., **Carpenter, S. K.**, & Mozer, M. C. (2011). Does incorrect guessing impair fact learning? *Journal of Educational Psychology*, 103, 48-59.
- Carpenter, S. K.** (2009). Cue strength as a moderator of the testing effect: The benefits of elaborative retrieval. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 35, 1563-1569.
- Carpenter, S. K., Pashler, H., & Cepeda, N. J.** (2009). Using tests to enhance 8th grade students' retention of U. S. history facts. *Applied Cognitive Psychology*, 23, 760-771.
- Carpenter, S. K., Pashler, H., Wixted, J. T., & Vul, E.** (2008). The effects of tests on learning and forgetting. *Memory & Cognition*, 36, 438-448.
- Carpenter, S. K., & Pashler, H.** (2007). Testing beyond words: Using tests to enhance visuospatial map learning. *Psychonomic Bulletin & Review*, 14, 474-478.

- Pashler, H., Rohrer, D., Cepeda, N. J., & **Carpenter, S. K.** (2007). Enhancing learning and retarding forgetting: Choices and consequences. *Psychonomic Bulletin & Review*, 14, 187-193.
- Wixted, J. T., & **Carpenter, S. K.** (2007). The Wickelgren power law and the Ebbinghaus savings function. *Psychological Science*, 18, 133-134.
- Carpenter, S. K.**, Pashler, H., & Vul, E. (2006). What types of learning are enhanced by a cued recall test? *Psychonomic Bulletin & Review*, 13, 826-830.
- Carpenter, S. K.**, & DeLosh, E. L. (2006). Impoverished cue support enhances subsequent retention: Support for the elaborative retrieval explanation of the testing effect. *Memory & Cognition*, 34, 268-276.
- Carpenter, S. K.**, & DeLosh, E. L. (2005). Application of the testing and spacing effects to name learning. *Applied Cognitive Psychology*, 19, 619-636.
- Carpenter, S. K.** (2005). Some neglected contributions of Wilhelm Wundt to the psychology of memory. *Psychological Reports*, 97, 63-73.

INVITED TALKS: (graduate student/postdoc author, undergraduate student author)

- Carpenter, S. K.** (2022, February). *Implementing principles from the science of learning within educational practice*. Keynote address presented at the Learning & the Brain Conference, San Francisco, CA.
- Carpenter, S. K.** (2020, September). *Why we've been teaching and learning the wrong way: Biases, beliefs, and illusions of competence in education*. Trinity University, Department of Psychology.
- Carpenter, S. K.** (2019, September). *Optimizing the benefits of prequestions for enhancing learning in STEM courses*. University of Pittsburgh, Department of Psychology and Learning, Research, and Development Center (LRDC).
- Carpenter, S. K.** (2019, July). *Using prequestions to enhance student learning*. Plenary address presented at the McMaster University Conference on Education and Cognition, Hamilton, Ontario, Canada.
- Carpenter, S. K.** (2019, June). *On students' (mis)judgments of learning and teaching effectiveness*. Presented at the Memory and Perceptual Illusions Conference, Fort Collins, CO.
- Carpenter, S. K.** (2019, January). *Using prequestions to enhance student learning in STEM courses*. University of California, Los Angeles, Department of Psychology.
- Carpenter, S. K.** (2018, November). *Using practice questions to enhance student learning*. Keynote address delivered at the Conference on Effective Learning Strategies. Eindhoven, Netherlands.
- Carpenter, S. K.** (2017, October). *Using retrieval practice to enhance achievement in STEM courses*. Dartmouth College, Department of Psychology and Education, Hanover, NH.
- Carpenter, S. K.**, Geller, J., Armstrong, P. I., Coffman, C. R., & Lamm, M. H. (2017, May). *Using prequestions to enhance the effects of retrieval practice in STEM courses*.

Keynote address delivered at the conference on Fostering Academic Success in Undergraduate Biological Science Education: Science of Learning in Action. University of New Hampshire, Durham, NH.

Carpenter, S. K., Lund, T. J. S., Coffman, C. R., Armstrong, P. I., Lamm, M. H., & Reason, R. D. (2016, April). *Classroom studies on the relationship between student achievement and retrieval-enhanced learning*. Mary Hennessey Blum Lecture, University of New Hampshire, Durham, NH.

Carpenter, S. K. (January, 2016). *Strategies to improve learning and retention of course material*. Presented at the Preparing Future Faculty symposium, Iowa State University, Ames, IA.

Carpenter, S. K., Lund, T. J. S., Coffman, C. R., Armstrong, P. I., Lamm, M. H., & Reason, R. D. (2015, June). *Classroom studies on the relationship between student achievement and retrieval-enhanced learning*. Keynote address at the annual Cognitive Load Theory Conference, Fort Collins, CO.

Carpenter, S. K. (January, 2015). *Strategies to improve learning and retention of course material*. Presented at the Preparing Future Faculty symposium, Iowa State University, Ames, IA.

Carpenter, S. K. (March, 2014). *Strategies to improve learning and retention of course material*. Presented at the Preparing Future Faculty symposium, Iowa State University, Ames, IA.

Carpenter, S. K. (2013, April). *Explaining the benefits of testing on learning: The role of mediating information*. University of Iowa Delta Center.

Carpenter, S. K. (2012, November). *Memory principles that optimize learning: Effects of retrieval, distributed practice, and feedback timing*. University of Illinois at Urbana-Champaign, Department of Educational Psychology.

Carpenter, S. K. (2011, September). *The effects of testing on retention and transfer of complex forms of learning*. Michigan State University, Department of Psychology, East Lansing, MI.

Carpenter, S. K. (2009, February). *Memory principles that optimize learning and retention: Implications for theory and instruction*. University of Northern Iowa, Department of Education, Cedar Falls, IA.

Carpenter, S. K. (2008, July). *Using tests to optimize learning: Implications for theory and educational practice*. Colorado State University, Department of Psychology, Fort Collins, CO.

Carpenter, S. K. (2007, November). *Using tests to enhance learning: Implications for education*. University of South Florida, Department of Psychology, Tampa, FL.

Carpenter, S. K., & Pashler, H. (2007, August). *Memory principles that optimize learning and retention: Implications for instruction*. Presented at the Summer Workshop for Teachers, San Diego Unified School Districts, San Diego, CA.

Carpenter, S. K. (2007, June). *Using tests to optimize learning: Implications for education*. Auburn University, Department of Psychology, Auburn, AL.

Carpenter, S. K. (2004, April). *Application of the testing and spacing effects to name-learning*. Paper presented at the Ellis-Battig Memory Symposium, Rocky Mountain Psychological Association, Reno, NV.

CONFERENCE TALKS: (graduate student/postdoc author, undergraduate student author)

Witherby, A. E., & **Carpenter, S. K.** (2022, April). *How does prior knowledge influence monitoring accuracy?* Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Carpenter, S. K. (2021, August). *Generating answers to prequestions supplements the benefits of retrieval practice*. Symposium talk presented at the online meeting of the European Association for Research on Learning & Instruction, Gothenburg, Sweden.

Carpenter, S. K. (2021, August). *Understanding and utilizing effort to optimize learning*. Symposium discussion presented at the online meeting of the European Association for Research on Learning & Instruction, Gothenburg, Sweden.

Carpenter, S. K., & St. Hilaire, K. J. (2019, June). *When do prequestions enhance student learning?* Symposium talk presented at the meeting of the Society for Applied Research in Memory & Cognition, Cape Cod, MA.

Corral, D., & **Carpenter, S. K.** (2019, June). *The benefits of testing and feedback on complex concept learning*. Paper presented at the meeting of the Society for Applied Research in Memory & Cognition, Cape Cod, MA.

Corral, D., & **Carpenter, S. K.** (April, 2019). *Acquiring complex concepts through immediate versus delayed feedback*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Corral, D., **Carpenter, S. K.**, & Perkins, K. (2018, April). *Assessing students' use of optional online reviews*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Carpenter, S. K., Rahman, S., Lund, T. J. S., Coffman, C. R., Lamm, M. H., & Armstrong, P. I. (2016, August). *Using retrieval practice to enhance achievement in STEM courses: What works, when, and for whom?* Symposium talk presented at the annual conference of the American Psychological Association, Denver, CO.

Endres, T., **Carpenter, S. K.**, Martin, A., & Renkl, A. (2016, June). *Constructive retrieval by prompted recall*. Paper presented at the annual Cognitive Load Theory Conference, Bochum, Germany.

Carpenter, S. K., Coffman, C. R., Rahman, S., Lund, T. J. S., Lamm, M. H., Armstrong, P. I., Reason, R. D., & Leow, S. (2016, April). *Using retrieval practice to enhance achievement in STEM courses*. Paper presented at the symposium on envisioning the future of undergraduate STEM education, Washington, DC.

Lamm, M. H., **Carpenter, S. K.**, Rahman, S., Armstrong, P. I., Coffman, C. R., & Reason, R. D. (2015, November). *Show them the data: A strategy to engage students in a material and energy balances course*. Paper presented at the annual meeting of the American Institute of Chemical Engineers, Salt Lake City, UT.

- Carpenter, S. K., Fernandez, C. S.** (2014, May). *Blocking benefits foreign language pronunciation learning more than interleaving*. Symposium talk presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.
- Carpenter, S. K., Wilford, M. M., Kornell, N., & Mullaney, K. M.** (August, 2013). *Instructor fluency increases perceptions of learning, but not actual learning*. Symposium talk presented at the annual meeting of the American Psychological Association, Honolulu, Hawaii.
- Carpenter, S. K., Kelly, J. W., & Sjolund, L. A.** (2013, June). *The effects of retrieval practice on visuospatial learning*. Symposium talk presented at annual meeting of the Society for Applied Research in Memory & Cognition, Rotterdam, Netherlands.
- Carpenter, S. K.** (2013, May). *Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction*. Symposium talk presented at the annual meeting of the Association for Psychological Science, Washington DC.
- Carpenter, S. K.** (2011, November). *Semantic information activated during retrieval contributes to later retention: Support for the mediator effectiveness hypothesis of the testing effect*. Paper presented at the annual meeting of the Psychonomic Society, Seattle, WA.
- Carpenter, S. K., Sachs, R. E., Martin, B. A., Schmidt, K., & Looft, R.** (2011, October). *Wie kann man neue Wörter auf Deutsch besser lernen? Die Bedeutung vom Kontext abzuleiten, oder die Übersetzung nur zu lesen?* Paper presented at the Iowa World Language Association, Des Moines, IA.
- Carpenter, S. K., & Olson, K.** (2011, April). *Why are picture superiority effects absent in foreign language vocabulary learning?* Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.
- Carpenter, S. K., Sachs, R. E., Looney, M., Martin, B. A., & Schmidt, K.** (2010, November). *Learning new vocabulary in German: The beneficial effects of inferring the meanings of unknown words*. Paper presented at the annual meeting of the Psychonomic Society, Saint Louis, MO.
- Carpenter, S. K., Sachs, R. E., Martin, B. A., & Looney, M.** (2010, October). *Wie kann man neue Wörter auf Deutsch besser lernen? Die Bedeutung vom Kontext abzuleiten, oder die Übersetzung nur zu lesen?* Paper presented at the annual meeting of the Iowa World Language Association, Des Moines, IA.
- Rohrer, D., Taylor, K., **Carpenter, S. K.**, Pashler, H., & Kang, S. H. K. (2010, June). *Tests can enhance the transfer of learning*. Paper presented at the annual meeting of the Institute of Education Sciences, Washington, DC.
- Carpenter, S. K.** (2009, November). *A low-maintenance method for inspiring good student projects in a research methods course*. Presented at the annual meeting of the Iowa Teachers of Psychology, Pella, IA.
- Carpenter, S. K., Erdman, M., & Kloeppel, J.** (2009, April). *Cue strength as a moderator of the testing effect*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

- Pashler, H., **Carpenter, S. K.**, & Rohrer, D. (2008, November). *Does guessing with little information interfere with learning?* Paper presented at the annual meeting of the Psychonomic Society, Chicago, IL.
- Carpenter, S. K.**, Pashler, H., Cepeda, N. J., & Alvarez, D. (2008, February). *Using tests to enhance 8th grade students' retention of U. S. history facts.* Paper presented at the annual meeting of the Science of Learning Center, Pittsburgh, PA.
- Carpenter, S. K.**, Pashler, H., & Cepeda, N. J. (2007, November). *Applying the principles of testing and spacing to classroom learning.* Paper presented at the annual meeting of the Psychonomic Society, Long Beach, CA.
- Carpenter, S. K.**, Pashler, H., Cepeda, N. J., & Alvarez, D. (2007, August). *Applying the principles of testing and spacing to classroom learning.* Paper presented at the Cognitive Science and Student Learning in the Classroom Symposium, Cognitive Science Society, Nashville, TN.
- Carpenter, S. K.**, Pashler, H., & Alvarez, D. (2007, January). *The Preuss project: Applying the principles of testing and spacing to classroom learning.* Paper presented at all-hands meeting of the Temporal Dynamics of Learning Center, La Jolla, CA.
- Carpenter, S. K.**, & Pashler, H. (2006, November). *Enhancing learning through retrieval practice: Can covert retrieval speed up visual and visuospatial learning?* Paper presented at the annual meeting of the Psychonomic Society, Houston, TX.
- Carpenter, S. K.**, Pashler, H., Wixted, J. T., & Vul, E. (2006, April). *Are tests effective at enhancing learning?* Paper presented at the Cognition and Student Learning Symposium, American Educational Research Association, San Francisco, CA.
- Pashler, H., **Carpenter, S. K.**, Rohrer, D., & Cepeda, N. J. (2005, November). *Does being forced to guess make one learn the wrong answer?* Paper presented at the annual meeting of the Psychonomic Society, Toronto, ON.
- Carpenter, S. K.** (2003, April). *Untangling the influences of cue effectiveness and item difficulty in the testing effect.* Paper presented at the annual meeting of the Rocky Mountain Psychological Association, Denver, CO.
- Carpenter, S. K.** (2003, April). *Wundt's neglected contributions to the psychology of memory.* Paper presented at the Rocky Mountain Psychological Association, Denver, CO.

CONFERENCE POSTERS:

(graduate student/postdoc author, undergraduate student author)

- Witherby, A. E., & **Carpenter, S. K.** (2021, November). *The effects of instructor fluency and preparedness on student learning and instructor evaluations.* Poster presented at the annual meeting of the Psychonomic Society, New Orleans, LA.
- Witherby, A. E., & **Carpenter, S. K.** (2020, November). *The influence of prior knowledge on learning and metacognitive monitoring.* Poster presented at the annual meeting of the Psychonomic Society, Austin, TX.

- Kane, K., St. Hilaire, K. J., & **Carpenter, S. K.** (2020, November). *Instructor gender and fluency bias students' perceived, but not actual, learning*. Poster presented at the annual meeting of the Psychonomic Society, Austin, TX.
- St. Hilaire, K. J., & **Carpenter, S. K.** (2020, November). *How question type affects learning from prequestions versus learning objectives*. Poster presented at the annual meeting of the Psychonomic Society, Austin, TX.
- King-Shepard, Q., Boden, K., Adelman, A., Nokes-Malach, T. J., & **Carpenter, S. K.** (2020, July). *Investigating the benefits of pre-questions on lecture-based learning*. Poster presented at the annual meeting of the Cognitive Science Society, Toronto, Ontario, CA.
- Witherby, A. E., & **Carpenter, S. K.** (2020, May). *Do the rich get richer? Effects of prior knowledge on new learning*. Poster presented at the annual meeting of the Association for Psychological Science, Chicago, IL.
- Endres, T., Renkl, A., & **Carpenter, S. K.** (2019, November). *Constructive retrieval by prompted recall: Exploiting the benefits of retrieval practice and elaboration*. Poster presented at the annual meeting of the Psychonomic Society, Montreal, Quebec, CA.
- Geller, J., & **Carpenter, S. K.** (2019, November). *Is a picture really worth a thousand words? Evaluating contributions of fluency and analytic processing in metacognitive judgments for pictures in foreign language vocabulary learning*. Poster presented at the annual meeting of the Psychonomic Society, Montreal, Quebec, CA.
- Corral, D., **Carpenter, S. K.**, St. Hilaire, K. J., Hickman, C., Reese, E., & Benshoof, C. (2019, November). *The effects of retrieval practice on analogical problem solving*. Poster presented at the annual meeting of the Psychonomic Society, Montreal, Quebec, CA.
- St. Hilaire, K. J., & **Carpenter, S. K.** (2019, November). *The effect of prequestions versus learning objectives on lecture-based learning*. Poster presented at the annual meeting of the Psychonomic Society, Montreal, Quebec, CA.
- Northern, P. E., Tauber, S. K., St. Hilaire, K. J., & **Carpenter, S. K.** (2019, November). *The impact of lecture fluency on note-taking*. Poster presented at the annual meeting of the Psychonomic Society, Montreal, Quebec, CA.
- St. Hilaire, K. J., & **Carpenter, S. K.** (2019, May). *Answering prequestions enhances learning, but only when you notice them*. Poster presented at the annual meeting of the Association for Psychological Science, Washington, DC.
- St. Hilaire, K. J., **Carpenter, S. K.**, & Jennings, J. (2018, November). *The prequestion effect: How question type and structure building ability impact learning*. Poster presented at the annual meeting of the Psychonomic Society, New Orleans, LA.
- Lim, A. F., Kelly, J. W., & **Carpenter, S. K.** (2018, November). *Effect of testing on route learning using GPS navigation*. Poster presented at the annual meeting of the Psychonomic Society, New Orleans, LA.
- Corral, D., & **Carpenter, S. K.** (2018, November). *Using testing to improve concept learning*. Poster presented at the annual meeting of the Psychonomic Society, New Orleans, LA.

- Corral, D., **Carpenter, S. K.**, & Clingan-Siverly, S. (2018, July). *When being wrong makes you right: Incorrect examples improve complex concept learning*. Poster presented at the annual meeting of the Cognitive Science Society, Madison, WI.
- Romena, N. P., Hefner, H. C., Northern, P. E., Tauber, S. K., Toftness, A. R., & **Carpenter, S. K.** (2018, April). *The effects of lecture fluency and instructor expertise on students' experiences*. Poster presented at the annual meeting of the Southwestern Psychological Association, Houston, TX.
- Geller, J., **Carpenter, S. K.**, Rahman, S., Toftness, A. R., Coffman, C. R., Manz, C. L., Armstrong, P. I., & Lamm, M. H. (2017, November). *The effects of prequestions on learning introductory biology*. Poster presented at the annual meeting of the Psychonomic Society, Vancouver, BC.
- Toftness, A. R., **Carpenter, S. K.**, Tauber, S. K., & Northern, P. E. (2017, November). *The effects of instructor fluency and expertise on students' overconfidence*. Poster presented at the annual meeting of the Psychonomic Society, Vancouver, BC.
- Toftness, A. R., & **Carpenter, S. K.** (2016, November). *The effects of prequestions on learning from video presentations*. Poster presented at the annual meeting of the Psychonomic Society, Boston, MA.
- Coffman, C., Manz, C., Armstrong, P., **Carpenter, S.**, Geller, J., Lamm, M., Leow, S., Pederson, L., Rahman, S., Reason, R., & Toftness, A. (2016, July). *Using systematic application of retrieval practice to enhance student achievement in introductory biology*. Poster presented at the annual meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.
- Manz, C., Coffman, C., Toftness, A., Reason, R., Rahman, S., Lamm, M., **Carpenter, S.**, & Armstrong, P. (2016, July). *The role of achievement motivation in students' choice of study habits in a large biology course*. Poster presented at the annual meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.
- Carpenter, S. K.**, Lund, T. J. S., Rahman, S., Coffman, C. R., Armstrong, P. I., & Lamm, M. H. (2016, August). *Students' use of retrieval-based review techniques in STEM courses*. Poster presented at the annual meeting of the American Psychological Association, Denver, CO.
- Rahman, S., & **Carpenter, S. K.** (2016, August). *Exploring the optimal placement of practice questions in learning from lectures*. Poster presented at the annual meeting of the American Psychological Association, Denver, CO.
- Rahman, S., **Carpenter, S. K.**, Lund, T. J. S., Coffman, C. R., Armstrong, P. I., Lamm, M. H., & Reason, R. D. (2015, November). *Tracking students' review patterns: Use of retrieval versus restudy*. Poster presented at the annual meeting of the Psychonomic Society, Chicago, IL.
- Coffman, C. R., Reason, R. D., Rahman, S., Lund, T. J. S., Lamm, M. H., **Carpenter, S. K.**, & Armstrong, P. I. (2015, July). *Engaging students in retrieval practice and reflection on learning to enhance achievement in STEM courses*. Poster presented at the annual meeting of the Society for Advancement of Biology Education, Minneapolis, MN.
- Carpenter, S. K.**, Lamm, M. H., Armstrong, P. I., Coffman, C. R., Rahman, S., & Reason, R. D. (2015, April). *Show them the data: The effects of worked examples on students'*

problem solving performance, study preferences, and study choices. Poster presented at the annual meeting for the Center for Integration of Research on Teaching and Learning (CIRTL), College Station, TX.

Rahman, S., **Carpenter, S. K.**, Lund, T. J. S., Coffman, C. R., Armstrong, P. I., Lamm, M. H., & Reason, R. D. (2015, April). *A classroom study on the relationship between student achievement and retrieval-enhanced learning.* Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Fernandez, C. S., & **Carpenter, S. K.** (2014, November). *Extending the boundaries of the testing effect: A look at verbal and nonverbal components.* Poster presented at the annual meeting of the Psychonomic Society, Long Beach, CA.

Coffman, C. R., Armstrong, P. I., Brewer, C. E., **Carpenter, S. K.**, Curtiss, J., Houston, J. P., Lamm, M. H., Reason, R. D., & Shuster, M. (2014, July). *Creating a culture of engaged STEM learners: Implementing evidence-based interventions to improve learning and transfer in diverse classrooms.* Poster presented at the annual meeting of the Society for the Advancement of Biology Education Research, Minneapolis, MN.

Fernandez, C. S., & **Carpenter, S. K.** (2014, May). *Blocking vs. interleaving: The effects of simultaneous presentation on learning foreign language pronunciations.* Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Vaughn, K. E., Rawson, K. A., & **Carpenter, S. K.** (2013, November). *Why does the benefit of testing depend on lag? Evaluating the elaborative retrieval hypothesis.* Poster presented at the annual meeting of the Psychonomic Society, Toronto, ON, CA.

Wilford, M. M., **Carpenter, S. K.**, Kornell, N., & Mullaney, K. M. (2013, November). *The misleading effects of fluency on learning.* Poster presented at the annual meeting of the Psychonomic Society, Toronto, ON, CA.

Mullaney, K. M., & **Carpenter, S. K.** (2012, November). *The benefit of spacing on retention and transfer of mathematics knowledge.* Poster presented at the annual meeting of the Psychonomic Society, Minneapolis, MN.

Olson, K., & **Carpenter, S. K.** (2011, November). *Delaying feedback helps, but only if you want to know the answer.* Poster presented at the annual meeting of the Psychonomic Society, Seattle, WA.

Olson, K., & **Carpenter, S. K.** (2011, May). *Learning new vocabulary through scaffolded feedback.* Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

Carpenter, S. K., & Vul, E. (2009, November). *The delay-of-feedback benefit: Timing vs. duration.* Poster presented at the meeting of the Psychonomic Society, Boston, MA.

Kang, S., **Carpenter, S. K.**, Pashler, H., & Rohrer, D. (2009, November). *Is subsequent learning hurt by prior erroneous guessing?* Poster presented at the annual meeting of the Psychonomic Society, Boston, MA.

Kang, S., **Carpenter, S. K.**, Rohrer, D., & Pashler, H. (2009, June). *Does guessing when one doesn't know the answer hurt subsequent learning?* Poster presented at the annual meeting of the Institute of Education Sciences, Washington, DC.

- Carpenter, S. K.**, Pashler, H., & Jones, J. J. (2008, November). *The effects of retrieval practice on associative recall of word pairs*. Poster presented at the annual meeting of the Psychonomic Society, Chicago, IL.
- Carpenter, S. K.**, Pashler, H., Rohrer, D., & Coburn, N. (2008, June). *Using retrieval practice to enhance learning of complex anatomy structures*. Poster presented at the annual meeting of the Institute of Education Sciences, Washington, DC.
- Carpenter, S. K.**, & Pashler, H. (2008, May). *Using retrieval practice to enhance learning of complex visual information*. Poster presented at the annual meeting of the Association for Psychological Science, Chicago, IL.
- Carpenter, S. K.**, Pashler, H., Cepeda, N. J., & Alvarez, D. (2008, February). *Using tests to enhance 8th grade students' retention of U. S. history facts*. Poster presented at the annual student/postdoc meeting of the Science of Learning Center, Pittsburgh, PA.
- Jones, J. J., Pashler, H., & **Carpenter, S. K.** (2008, January). *Statistical learning for passively viewed, actively recorded and explicitly predicted sequences*. Poster presented at the annual meeting of the Temporal Dynamics of Learning Center, Nashville, TN.
- Carpenter, S. K.**, Pashler, H., Cepeda, N. J., & Alvarez, D. (2008, January). *Using tests to enhance 8th grade students' retention of U. S. history facts*. Poster presented at the annual meeting of the Temporal Dynamics of Learning Center, Nashville, TN.
- Carpenter, S. K.**, Pashler, H., Rohrer, D., & Cepeda, N. J. (2007, August). *Does forced guessing cause one to learn the wrong answer?* Poster presented at the symposium on Memory Dynamics and the Optimization of Instruction, American Psychological Association, San Francisco, CA.
- Carpenter, S. K.**, Pashler, H., Wixted, J. T., & Vul, E. (2007, June). *Item characteristics and task conditions that predict forgetting*. Poster presented at the annual meeting of the Institute for Education Sciences, Washington, DC.
- Carpenter, S. K.**, Pashler, H., Wixted, J. T., & Vul, E. (2007, May). *Facts, faces, and obscure places: Individual and item characteristics that predict rate of forgetting*. Poster presented at the annual meeting of the Association for Psychological Science, Washington, DC.
- Carpenter, S. K.**, Pashler, H., Wixted, J. T., & Vul, E. (2007, January). *The effects of tests on learning and forgetting*. Poster presented at the annual meeting of the Temporal Dynamics of Learning Center, La Jolla, CA.
- Carpenter, S. K.**, Pashler, H., & Vul, E. (2006, November). *The effects of test timing and feedback timing on the learning of obscure facts*. Poster presented at the annual meeting of the Psychonomic Society, Houston, TX.
- Carpenter, S. K.**, Pashler, H., & Vul, E. (2006, May). *What types of learning are enhanced by a cued recall test?* Poster presented at the annual meeting of the Association for Psychological Science, New York, NY.
- Carpenter, S. K.**, Pashler, H., & Wixted, J. T. (2005, November). *The testing effect: Enhanced retention or attenuated forgetting?* Poster presented at the annual meeting of the Psychonomic Society, Toronto, ON.

Carpenter, S. K., & DeLosh, E. L. (2004, November). *A multiple-cue hypothesis for the testing effect*. Poster presented at the annual meeting of Psychonomic Society, Minneapolis, MN.

Carpenter, S. K. (2003, May). *The role of item difficulty in the testing effect*. Poster presented at the festschrift in honor of Lyle Bourne, Walter Kintsch, Tom Landauer. Boulder, CO.

Carpenter, S. K., & DeLosh, E. L. (2002, April). *The role of retrieval strategy in memory for high- and low-frequency words*. Poster presented at the annual meeting of the Rocky Mountain Psychological Association, Park City, UT.

TEACHING:

- **PSY 598 Graduate Seminar – Learning and Memory** (1 section taught): Graduate course exploring empirical, methodological, theoretical, and applied perspectives on memory research.
- **PSY 313 Learning & Memory** (10 sections taught; 1 section hybrid): Undergraduate course exploring behavioral and neurological underpinnings of learning.
- **PSY 101H Introduction to Psychology, Honors** (3 sections taught): Undergraduate honors course covering a range of topics in psychology.
- **PSY 302 Research Methods** (18 sections taught; 2 sections online): Undergraduate course emphasizing a hands-on approach to empirical research in psychology.

EXTERNAL SERVICE:

- Associate editor for *Journal of Applied Research in Memory & Cognition* (2013 - 2016, 2018 - 2021)
- Editorial board member for *Memory & Cognition* (2009 - 2020)
- Editorial board member for *Journal of Experimental Psychology: Learning, Memory, & Cognition* (2011 - present)
- Editorial board member for *Educational Psychology Review* (2012 - present)
- Editorial board member for *Journal of Experimental Psychology: Applied* (2015 - present)
- Editorial board member for *Psychonomic Bulletin & Review* (2020 - present)
- NSF Grant Review Panelist (reviewed and ranked 30+ proposals each for *Science of Learning*, *Improving Undergraduate STEM Education*, *EHR Core Research*, and *Graduate Research Fellowships*) in 2016, 2018, 2019, 2020, 2021, 2022 (two panels each in 2021 and 2022)
- Ad-hoc reviewer for 35+ journals and books in learning, cognition, and education

UNIVERSITY AND DEPARTMENTAL SERVICE:

- Graduate Council for College of Liberal Arts and Sciences (2018 – 2021)
- Committee on Outdoor Teaching and Learning (2018 – present)
- Faculty Advisor for *Zeitgeist* (German Speaking) Campus Organization (2009 - present)
- Faculty Advisor for *Psi Chi* (2010 - 2016)
- Promotion and Tenure Committee, Psychology (2018 – present)
- Executive Committee (Advisory Committee to Psychology Chair, 2014-2015; 2017-2018)

- Committee for Evaluation of Research, Teaching and Service in Psychology (2013-2016)
- Human Research Ethics Review/IRB Screening Committee (2018 – 2020)
- Quantitative Search Committee, Psychology (2018)
- Cognitive Neuroscience Search Committee, Psychology (2017)
- Spousal Accommodation Search Committee, Psychology (2015)
- Diversity Colloquium Committee, Psychology (2020 – present)
- Faculty Enhancement Committee, Psychology (2016 – 2018, 2020 - present)

PROFESSIONAL AFFILIATIONS:

- American Psychological Association (Member since 2005)
- Association for Psychological Science (Member since 2005)
- Midwestern Psychological Association (Member since 2008)
- Psychonomic Society (Member since 2007)
- Cognitive Science Society (Member since 2018)
- Society for Applied Research in Memory and Cognition (Member since 2018)
- European Association for Research on Learning and Instruction (Member since 2020)