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Professional Experience

Associate Professor, 2017–Present. *University of Louisville*

Assistant Professor, 2011–2017. *University of Louisville*

Postdoctoral Fellowship, 2009–2011. *Vanderbilt University*

Education

Ph.D. Cognitive Psychology, 2009. *Miami University*

M. A. Applied Experimental Psychology, 2004. *Western Kentucky University*

B. S. Psychology, 2000, *Indiana Wesleyan University*

Publications

DeCaro, M. S., & Van Stockum, C. A. Jr. (in press). Reconcilable differences: Working memory capacity both supports and hinders insight. *International Handbook of Creative Cognition* (Eds. Linden Ball and Frederic Vallee-Tourangeau).

*Van Stockum, C. A. Jr., & **DeCaro, M. S.** (2020). When working memory mechanisms compete: Predicting cognitive flexibility versus mental set. *Cognition*, 201. doi:10.1016/j.cognition.2020.104313

*Weaver, J. P., Ralston, P. A. S., & **DeCaro, M. S.** (2020). Limited support for use of a social-belonging intervention with first-year engineering students. *Journal for STEM Education Research*. doi:10.1007/s41979-020-00041-z. Included in What Works Clearinghouse Intervention Report: <https://ies.ed.gov/ncee/wwc/InterventionReport/720>

DeCaro, D. A., **DeCaro, M. S.**, Hotaling, J., & Johnson, J. G. (2020). Procedural utility in decision making: Trading freedom of choice to avoid economic losses. *Judgment and Decision Making* 15, 517-533. <http://journal.sjdm.org/12/12425/jdm12425.html>.

†Neace, S., Hicks, A., **DeCaro, M. S.**, & Salmon, P. (2020). Trait mindfulness and intrinsic exercise motivation uniquely contribute to exercise self-efficacy. *Journal of American College Health*. doi:10.1080/07448481.2020.1748041

*Bellinger, D. B., & **DeCaro, M. S.** (2019). Note-taking format and difficulty impact learning from instructor-provided lecture notes. *Quarterly Journal of Experimental Psychology*, 72, 2807-2819. doi:10.1177/1747021819879434

†Newman, P. M., & **DeCaro, M. S.** (2019). Learning by exploring: How much guidance is optimal? *Learning and Instruction*, 62, 49-63. doi:10.1016/j.learninstruc.2019.05.005

Fries, L., **DeCaro, M. S.**, & Ramirez, G. (2019). The lure of seductive details during lecture learning. *Journal of Educational Psychology*, 111, 736-749. doi:10.1037/edu0000301

- DeCaro, M. S.** (2018). When does higher working memory capacity help or hinder insight problem solving? In F. Vallee-Tourangeau (Ed.), *Insight: On the Origins of New Ideas* (pp. 79-104). New York, NY: Routledge.
- Revised chapter republished in *Current Issues in Thinking and Reasoning* (F. Vallee-Tourangeau, Ed.).
- *Weaver, J. P., Chastain, R., DeCaro, D. A., & **DeCaro, M. S.** (2018). Reverse the routine: Problem solving before instruction improves conceptual knowledge in undergraduate physics. *Contemporary Educational Psychology, 52*, 36-47. doi:10.1016/j.cedpsych.2017.12.003
- DeCaro, M. S.,** & Van Stockum, C. A. Jr. (2018). Ego-depletion improves insight. *Thinking and Reasoning, 24*, 315-343. doi:10.1080/13546783.2017.1396253
- DeCaro, M. S.,** Van Stockum, C. A. Jr., & Wieth, M. (2017). The relationship between working memory and insight depends on moderators: Reply to Chuderski and Jastrzębski (2017). *Journal of Experimental Psychology: Learning, Memory, and Cognition, 43*, 2005-2010. doi:10.1037/xlm0000460
- DeCaro, M. S.** (2016). Inducing mental set constrains procedural flexibility and conceptual understanding in mathematics. *Memory and Cognition, 44*, 1138-1148. doi:10.3758/s13421-016-0614-y
- DeCaro, M. S.,** Van Stockum, C. A., & Wieth, M. B. (2016). When higher working memory capacity hinders insight. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 42*, 39-49. doi:10.1037/xlm0000152
- *Bellinger, D. B., **DeCaro, M. S.,** & Ralston, P. A. S. (2015). Mindfulness, anxiety, and high-stakes mathematics performance in the laboratory and classroom. *Consciousness and Cognition, 37*, 123-132. doi:10.1016/j.concog.2015.09.001
- DeCaro, D. A., **DeCaro, M. S.,** & Rittle-Johnson, B. (2015). Achievement motivation and knowledge development during exploratory learning. *Learning and Individual Differences, 37*, 13-26. doi:10.1016/j.lindif.2014.10.015
- Fyfe, E. R., **DeCaro, M. S.,** & Rittle-Johnson, B. (2015). When feedback is cognitively-demanding: The importance of working memory capacity. *Instructional Science, 73-91*. doi: 10.1007/s11251-014-9323-8
- *Van Stockum, C. A., & **DeCaro, M. S.** (2014). Enclothed cognition and controlled attention during insight problem-solving. *The Journal of Problem Solving, 7(1)*, 73-83. doi:10.7771/1932-6246.1164
- Fyfe, E. R., **DeCaro, M. S.,** & Rittle-Johnson, B. (2014). An alternative time for telling: When conceptual instruction prior to problem solving improves mathematical knowledge. *British Journal of Educational Psychology, 84*, 502-519. doi:10.1111/bjep.12035
- DeCaro, M. S.,** & Rittle-Johnson, B. (2012). Exploring mathematics problems prepares children to learn from instruction. *Journal of Experimental Child Psychology, 113*, 552-568. doi:10.1016/j.jecp.2012.06.009
- Fyfe, E. R., Rittle-Johnson, B., & **DeCaro, M. S.** (2012). The effects of feedback during exploratory mathematics problem solving: Prior knowledge matters. *Journal of Educational Psychology, 104*, 1094-1108. doi:10.1037/a0028389
- DeCaro, M. S.,** Thomas, R. D., Albert, N. B., & Beilock, S. L. (2011). Choking under pressure: Multiple routes to skill failure. *Journal of Experimental Psychology: General, 140*, 390-406. doi:10.1037/a0023466
- DeCaro, M. S.,** Rotar, K. E., Kendra, M. S., & Beilock, S. L. (2010). Diagnosing and alleviating the impact of performance pressure on mathematical problem solving. *Quarterly Journal of Experimental Psychology, 63*, 1619-1630. doi:10.1080/17470210903474286

- DeCaro, M. S.**, & Beilock, S. L. (2010). The benefits and perils of attentional control. In B. Bruya and M. Csikszentmihalyi (Eds.), *Effortless Attention: A New Perspective in the Cognitive Science of Attention and Action*. MIT Press. doi:10.7551/mitpress/9780262013840.003.0003
- DeCaro, M. S.**, & Maricle, D. E. (2010). Working Memory. In S. Goldstein and J. A. Naglieri (Eds.), *Encyclopedia of Child Behavior and Development*. Springer: Boston.
- DeCaro, M. S.**, Carlson, K. D., Thomas, R. D., & Beilock, S. L. (2009). When and how less is more: Reply to Tharp & Pickering. *Cognition*, *111*, 415-421. doi:10.1016/j.cognition.2009.03.001
- Mutter, S. A., **DeCaro, M. S.**, & Plumlee, L. F. (2009). The role of contingency and contiguity in young and older adults' causal learning. *Journal of Gerontology: Psychological Sciences*, *64*, 315-323. doi:10.1093/geronb/gbp004
- DeCaro, M. S.**, Thomas, R. D., & Beilock, S. L. (2008). Individual differences in category learning: Sometimes less working memory capacity is better than more. *Cognition*, *107*, 284-294. doi:10.1016/j.cognition.2007.07.001
- Beilock, S. L., & **DeCaro, M. S.** (2007). From poor performance to success under stress: Working memory, strategy selection, and mathematical problem solving under pressure. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*, 983-998. doi:10.1037/0278-7393.33.6.983
- DeCaro, M. S.**, Wieth, M., & Beilock, S. L. (2007). Methodologies for examining problem solving success and failure. *Methods*, *42*, 58-67. doi:10.1016/j.ymeth.2006.12.006

*Graduate Student First Author

†Undergraduate Student First Author

Conference Proceeding Papers

- Hieb, J., **DeCaro, M. S.**, & Chastain, R. J. (2021). Work in Progress: Exploring before instruction using an online Geogebra™ activity in introductory engineering calculus. *Proceedings of the American Society for Engineering Education*.
- Frag, A., Ali, A., Alkabbany, I., Foreman, C., Tretter, T., **DeCaro, M. S.**, & Hindy, N. C. (2021). Toward a quantitative engagement monitor for STEM education. *Proceedings of the American Society for Engineering Education*.
- Frag, A., Ali, A., Alkabbany, I., Foreman, C., **DeCaro, M. S.**, & Tretter, T. (2020). Towards a multi-dimensional biometric approach to real-time measurement of student engagement in the STEM classroom. *Proceedings of the American Society for Engineering Education*.
- †Newman, P. M., & **DeCaro, M. S.** (2018). How much support is optimal during exploratory learning? *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. Madison, WI: Cognitive Science Society.
- *Bego, C. R., Chastain, R. J., Pyles, L. M., & **DeCaro, M. S.** (2018). Multiple representations in physics: Deliberate practice does not improve exam scores. *Proceedings of the IEEE Frontiers in Education conference*. **Benjamin Dasher Best Paper Award winner**.
- *Weaver, J. P., **DeCaro, M. S.**, Hieb, J. L., & Ralston, P. S. (2016). Social belonging and first-year engineering mathematics: A collaborative learning intervention. *Proceedings of the American Society for Engineering Education*.
- DeCaro, D. A., **DeCaro, M. S.**,¹ & Rittle-Johnson, B. (2013). Achievement motivation and strategy selection during exploratory learning. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 370-375). Berlin, Germany: Cognitive Science Society. (¹Joint first author)

*Van Stockum, C., & **DeCaro, M. S.** (2013). The path less taken: When working memory capacity constrains insight. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 3633-3638). Berlin, Germany: Cognitive Science Society.

Grants

National Science Foundation-IUSE 2012342

DeCaro, M. S. (PI), Hieb, J., Fuselier, L., & Chastain, R. J.

Exploratory Learning Activities: Evidence, Mechanisms, and Professional Development in Undergraduate STEM Courses

Costs: \$599,987

July 1, 2020– June 30, 2024

National Science Foundation-IUSE 1900456

Farag, A. (PI), Foreman, C., **DeCaro, M. S.**, Tretter, T., & Ali, A.

Measuring Student Engagement in Lower-Division Engineering Mathematics Classes

Costs: \$300,000

July 15, 2019 – June 30, 2022

EVPRI Internal Grant Program: Research Type II Grant, University of Louisville

Sephton, S. (PI), Salmon, P., Depue, B., Lyle, K., **DeCaro, M.**, Kayser, K., & Newton, K. (Co-PIs). A Dyadic Mindfulness Intervention for College Students and Their Roommates: Mechanisms and Health Effects

Costs: \$10,000

January 1, 2017 – December 31, 2017

EVPRI Internal Grant Program: Research Type I Grant, University of Louisville

DeCaro, M. S. (PI), Salmon, P., & Ralston, P. A. S. Test Anxiety and High-Stakes Exams: A Mindfulness Training Intervention for First-Year Engineering Students

Costs: \$2960.50

January 1, 2016 – December 31, 2016

Invited Talks

Mississippi State University, *Cognitive Science Colloquium*, Feb 2021

Midwestern Psychological Association, *Invited Talk*, May 2016

Southern Society for Philosophy and Psychology, *Working Memory Symposium*, March 2016

University of Cincinnati, *Cognition, Action, and Perception Colloquium*, Dec 2015

University of Louisville, *Department of Psychological and Brain Sciences*, Feb 2011

Vanderbilt University, Dec 2008

Association for Psychological Science, *Research Award Symposium*, May 2008

Presentations

*Velic, L., †Kaiser, O., & **DeCaro, M. S.** (2021, November). Comparing effectiveness of exploratory learning activities: Generating multiple strategies vs. inventing one strategy. Poster presented at the *Annual Meeting of the Psychonomic Society*.

- DeCaro, M. S.** (2021, October). Designing exploratory learning activities to improve students' conceptual understanding. Presented at the *Society for the Teaching of Psychology Annual Conference on Teaching*, Louisville, KY.
- *McClellan, D. K., Chastain, R. J., & **DeCaro, M. S.** (2021, August). Students with disorganized study habits benefit from cognitive prompts during online video lectures. Poster presented at the *APT Physics Education Research Conference*.
- Hieb, J., **DeCaro, M. S.**, & Chastain, R. J. (2021, July). Comparing explore-first to lecture then practice with first-year engineering students in an introductory calculus course using an online Geogebra activity. Paper presented at the *Annual Meeting of the American Society for Engineering Education*.
- Farag, A. A., Ali, A., Alkabanny, I. M., Foreman, C., Tretter, T., **DeCaro, M. S.**, & Hindy, N. C. (2021, July). Towards a quantitative engagement monitor for STEM education. Poster presented at the *Annual Meeting of the American Society for Engineering Education*.
- Cucchiari, V., **DeCaro, M. S.**, & Macchi, L. (2021, June). The role of verbal and visuospatial working memory in insight problem solving. Presented at the *International Conference on Thinking*.
- Appel, R., DeCaro, D., **DeCaro, M.** (2021, June). Elections as Faustian Bargains: Assessing dynamic economic and procedural utility tradeoffs before the 2020 US Election. *Max Planck Sumer Institute on Bounded Rationality: Rethinking Behavioral Economics*.
- †Derkson, S. & **DeCaro, M. S.** (2021, May). Exploratory learning does not reduce the achievement gap for racially minoritized students. Paper presented at the *Association for Psychological Science*.
- *McClellan, D. K., Chastain, R. J., & **DeCaro, M. S.** (2021, May). Embedding cognitive and metacognitive prompts in an online STEM lecture. Paper presented at the *Association for Psychological Science*.
- DeCaro, M. S.** (2020, December). When exploring novel problems before instruction improves learning. Invited symposium paper presented at the *Annual Meeting of the Southern Society for Psychology and Philosophy*.
- *Bellinger, D. B., & **DeCaro, M. S.** (2020, December). Note-taking format and difficulty impact learning from instructor-provided lecture notes. Paper presented at the *Annual Meeting of the Southern Society for Psychology and Philosophy*.
- *Bush, J., **DeCaro, M. S.**, & DeCaro, D. A. (2020, December). Exploring Prior to Instruction Improves Conceptual Understanding and Cooperation in a Social Dilemma Game. Paper presented at the *Annual Meeting of the Southern Society for Psychology and Philosophy*.
- *Saeedi, M., Lyle, K. B., & **DeCaro, M. S.** (2020, cancelled due to COVID). Retrieval practice vs. exploratory learning: A comparison of novice learners in statistics. Paper to be presented at the *Annual Meeting of the Southern Society for Psychology and Philosophy*.
- †Arar, T., Saeedi, M., **DeCaro, M. S.**, & Chastain, R. J. (2020, cancelled due to COVID). Engaged instructional techniques are associated with greater growth mindset. Paper to be presented at the *Annual Meeting of the Southern Society for Psychology and Philosophy*.
- †Velic, L., **DeCaro, M. S.**, & DeCaro, D. A. (2020, cancelled due to COVID). Understanding How Communication Improves Cooperation in Social Dilemmas. Poster to be presented at the *Annual Meeting of the Southern Society for Psychology and Philosophy*.
- DeCaro, M. S.**, Bego, C. B., Newman, P. N., & Velic, L. (2020, November). When does exploring before instruction improve learning? The importance of highlighting problem features. Paper presented at the *Annual Meeting of the Psychonomic Society*.

- *Bego, C. R., Chastain, R. J., & **DeCaro, M. S.** (2020, November). Exploring with contrasting cases prepared undergraduate physics students for future learning. Poster presented at the *Annual Meeting of the Psychonomic Society*.
- *McClellan, D. K., Chastain, R. J., & **DeCaro, M. S.** (2020, November). The effectiveness of cognitive and metacognitive prompts during an online STEM lecture. Poster presented at the *Annual Meeting of the Psychonomic Society*.
- *Weaver, J. P., Chastain, R. J., & **DeCaro, M. S.** (2020, May). Use of analogs during exploratory learning reduces cognitive load while learning a new physics concept. Poster presented at the *Annual Meeting of the Association for Psychological Science*, Chicago, IL.
- †Newman, P. M., Bego, C. R., & **DeCaro, M. S.** (2019, November). Exploring novel problems before instruction: Activity type matters. Poster presented at the *Annual Meeting of the Psychonomic Society*, Montreal, Canada.
- DeCaro, M. S.** (2019, October). Mental set in mathematics reduces procedural flexibility and conceptual understanding. Poster presented at the *Biennial Meeting of the Cognitive Development Society*, Louisville, KY.
- †Velic, L., Weaver, J. P., & **DeCaro, M. S.** (2019, October). Teaching shortcuts before complex strategies improves flexibility in mathematical equivalence problem solving. Poster presented at the *Biennial Meeting of the Cognitive Development Society*, Louisville, KY.
- *Weaver, J. P., Chastain, R. J., Penny, S., & **DeCaro, M. S.** (2019, October). Exploring analogous problems before lecture enhances metacognition of conceptual knowledge in college physics. Poster presented at to the *Biennial Meeting of the Cognitive Development Society*, Louisville, KY.
- *Weaver, J. P., Chastain, R. J., & **DeCaro, M. S.** (2019, April). Benefits of direct instruction are immediate but not long lasting when compared to exploratory learning. Poster presented at the *American Educational Research Association 2019 Annual Meeting*, Toronto, ON.
- †Newman, P. M., & **DeCaro, M. S.** (2018, November). When is guidance during exploratory learning optimal? Poster presented at the *Annual Meeting of the Psychonomic Society*, New Orleans, LA.
- *Bego, C. R., Chastain, R. J., & **DeCaro, M. S.** (2018, October). Bridging multiple representations: Effects of deliberate practice in the undergraduate physics classroom. Paper presented at the *IEEE Frontiers in Education conference*, San Jose, CA. **FIE 2018 Benjamin Dasher Best Paper Award.**
- *Saeedi, M., Pyles, L., **DeCaro, M. S.**, & Chastain, R. J. (2018, August). The impact of engaged instructional techniques on students' mindsets. Poster presented at the *Physics Education Research Conference*, Washington DC.
- *Pyles, L., Bego, C. R., Chastain, R. J., & **DeCaro, M. S.** (2018, August). Investigating the effects of deliberate practice on introductory physics student representation skills. Poster presented at the *Physics Education Research Conference*, Washington DC.
- DeCaro, M. S.**, Bellinger, D. B., & Ralston, P. A. S. (2018, July). Mindfulness and test anxiety in undergraduate engineering mathematics. Paper presented at the *40th Annual Conference of the Cognitive Science Society*, Madison, WI.
- †Newman, P. M., & **DeCaro, M. S.** (2018, July). How much support is optimal during exploratory learning? Paper presented at the *40th Annual Conference of the Cognitive Science Society*, Madison, WI. **Cognitive Science Society Travel Award.**
- *Hicks, A., Neace, S., **DeCaro, M. S.**, & Salmon, P. (2018, May). Gratitude as a predictor of intrinsic exercise motivation. Poster presented at the *American College of Sports Medicine Annual Meeting*, Minneapolis, MN.

- [†]Neace, S., Hicks, A., **DeCaro, M. S.**, & Salmon, P. (2018, May). Mindfulness and intrinsic exercise motivation: The mediating role of exercise self-efficacy. Poster presented at the *American College of Sports Medicine Annual Meeting*, Minneapolis, MN.
- *Weaver, J. P., **DeCaro, M. S.**, & Ralston, P. A. S. (2018, April). Limited support for use of a social-belonging intervention with first-year engineering students. Paper presented at the *American Education Research Association Conference*, New York, NY.
- Fries, L., Ramirez, G., & **DeCaro, M. S.** (2017, November). The impact of seductive details on students' lecture learning. Poster presented at the *Annual Meeting of the Psychonomic Society*, Vancouver, Canada.
- *Bego, C. R., Chastain, R. J., & **DeCaro, M. S.** (2017, July). The effects of deliberate practice on representational skills. Poster presented at the *Physics Education Research Conference*, Cincinnati OH.
- Chastain, R., Weaver, J. P., **DeCaro, M. S.**, & DeCaro, D. A. (2017, July). Using an explore-first strategy in introductory-level courses. Paper presented at the *American Association of Physics Teachers Conference*, Cincinnati OH.
- [†]Newman, P. M., & **DeCaro, M. S.** (2017, June). More guidance is better when learning by inventing. Paper presented at the *Midwestern Cognitive Science Conference*, Oxford, OH.
- *Saeedi, M., & **DeCaro, M. S.** (2017, June). Person or process? The focus of evaluative monitoring in high-pressure situations impacts executive attention. Poster presented at the *Midwestern Cognitive Science Conference*, Oxford, OH.
- [†]Newman, P. M., & **DeCaro, M. S.** (2017, May). Learning by invention: How much support is optimal? Poster presented at the *Association for Psychological Science Conference*, Boston, MA.
- *Weaver, J. P., **DeCaro, M. S.**, Chastain, R., & DeCaro, D. A. (2017, April). Exploration before instruction improves transfer in undergraduate physics. Paper presented at the *American Education Research Association Conference*, San Antonio, TX. **AERA Division C Graduate Student Research Excellence Award.**
- *Van Stockum, C. A. Jr., & **DeCaro, M. S.** (2016, November). Working memory mechanisms predict insight in opposite directions. Poster presented at the *Annual Meeting of the Psychonomic Society*, Boston, MA.
- *Weaver, J. P., **DeCaro, M. S.**, Hieb, J. L., & Ralston, P. S. (2016, July). Social belonging and first-year engineering mathematics: A collaborative learning intervention. Paper presented at the *American Society for Engineering Education Conference*, New Orleans, LA.
- *Van Stockum, C. A. Jr., & **DeCaro, M. S.** (2016, March). Working memory capacity mechanisms differentially predict flexibility versus mental set. Paper presented at *The Southern Society of Philosophy and Psychology*, Louisville, KY. **Griffith Memorial Award in Psychology.**
- *Weaver, J. P., Chastain, R., **DeCaro, M. S.**, & DeCaro, D. A. (2016, March). The impact of explore-first versus instruct-first in large enrollment introductory courses. Paper presented at the *Kentucky Association of Physics Teachers Conference*, Centre College, KY.
- *Bellinger, D. B., & **DeCaro, M. S.** (2015, November). What makes generation a desirable difficulty? Comparison of two appropriate processing frameworks. Poster presented at the *Annual Meeting of the Psychonomic Society*, Chicago, IL.
- *Van Stockum, C. A. Jr., & **DeCaro, M. S.** (2015, November). Different working memory components predict flexibility versus mental set. Poster presented at the *Annual Meeting of the Psychonomic Society*, Chicago, IL.

- DeCaro, M. S.** (2015, May). Reducing entrenchment and improving problem-solving in the mathematics classroom. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.
- *Bellinger, D. B., **DeCaro, M. S.**, & Ralston, P. A. S. (2015, May). Mindfulness, anxiety, and mathematics performance in the laboratory and classroom. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.
- *Van Stockum, C. A., & **DeCaro, M. S.** (2015, May). Enclothed cognition and controlled attention during insight problem-solving. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.
- DeCaro, M. S.** (2015, March). Improving procedural knowledge and transfer by teaching a shortcut strategy first. Paper presented at the semiannual meeting of the *Society for Research on Educational Effectiveness*, Washington DC.
- *Bellinger, D. B., **DeCaro, M. S.**, & Ralston, P. A. S. (2015, February). Mindfulness benefits exam performance by reducing test anxiety. Poster presented at the *Society for Personality and Social Psychology*, Long Beach, CA.
- *Van Stockum, C. A., & **DeCaro, M. S.** (2014, November). The upside of down-regulated self-control: Depletion enhances insight. Poster presented at the *Annual Meeting of the Psychonomic Society*, Long Beach, CA.
- *Bellinger, D. B., & **DeCaro, M. S.** (2014, May). Gestalt-enhanced illustrations and learning from scientific text: The role of cognitive load. Poster presented at the *Midwestern Cognitive Science Conference*, Dayton, OH.
- *Van Stockum, C. A., & **DeCaro, M. S.** (2014, May). Perceived exhaustion predicts mind wandering. Poster presented at the *Midwestern Cognitive Science Conference*, Dayton, OH.
- *Edlin, J. M., Van Stockum, C. A., **DeCaro, M. S.**, & Lyle, K. B. (2014, May). Bilateral saccade execution can impair working memory capacity. Poster presented at the *Midwestern Cognitive Science Conference*, Dayton, OH.
- Rittle-Johnson, B., Fyfe, E. R., Loehr, A., & **DeCaro, M. S.** (2014, April). Learning from explanation: The timing and source of explanations for learning early algebra. Paper presented at the *American Education Research Association Conference*, Philadelphia, PA.
- Fyfe, E. R., **DeCaro, M. S.**, & Rittle-Johnson, B. (2014, April). The role of feedback type and working memory capacity during problem solving. Paper presented at the *American Education Research Association Conference*, Philadelphia, PA.
- *Bellinger, D. B., & **DeCaro, M. S.** (2013, November). Learning from scientific illustrations: Do Gestalt principles matter? Poster presented at the *Annual Meeting of the Psychonomic Society*, Toronto, ON, Canada.
- DeCaro, D. A., **DeCaro, M. S.**¹, & Rittle-Johnson, B. (2013, August). Achievement motivation and strategy selection during exploratory learning. Paper presented at the *35th Annual Conference of the Cognitive Science Society*. Berlin, Germany. (¹Joint first author)
- *Van Stockum, C., & **DeCaro, M. S.** (2013, August). The path less taken: When working memory capacity constrains insight. Poster presented at the *35th Annual Conference of the Cognitive Science Society*. Berlin, Germany.
- Loehr, A. M., Miller, M. R., **DeCaro, M. S.**, & Rittle-Johnson, B. (2013, May). Semantic verbal fluency predicts mathematical learning. Poster presented at the annual meeting of the *Association for Psychological Science*, Washington DC.

- Fyfe, E. R., **DeCaro, M. S.**, & Rittle-Johnson, B. (2013, March). An alternative time for telling: When conceptual instruction prior to exploration improves mathematical knowledge. Paper presented at the semiannual meeting of the *Society for Research on Educational Effectiveness*, Washington DC.
- DeCaro, M. S.** (2012, November). When higher working memory capacity leads to choking or excelling under pressure on a sensorimotor skill. Poster presented at the *Annual Meeting of the Psychonomic Society*, Minneapolis, MN.
- DeCaro, M. S.**, Wieth, M., & Beilock, S. L. (2012, May). When higher working memory limits insight problem solving. Paper presented at the annual *Midwestern Cognitive Science Conference*, Bloomington, IN.
- DeCaro, M. S.**, DeCaro, D. A., & Rittle-Johnson, B. (2011, September). Preparing to learn from math instruction: Mastery-oriented students benefit most from exploratory activities. Paper presented at the annual meeting of the *Society for Research on Educational Effectiveness*, Washington DC.
- Fyfe, E. R., Rittle-Johnson, B., & **DeCaro, M. S.** (2011, September). The effects of feedback during exploratory math practice. Paper presented at the annual meeting of the *Society for Research on Educational Effectiveness*, Washington DC.
- DeCaro, M. S.** (2011, August). Situational pressure, attentional demands, and skill failure. Paper presented at the annual meeting of the *American Psychological Association*, Washington DC.
- DeCaro, M. S.**, & Rittle-Johnson, B. (2011, April). Self-explanation prompts are less beneficial if students know more. Paper presented at the *American Education Research Association Conference*, New Orleans, LA.
- DeCaro, M. S.**, & Rittle-Johnson, B. (2011, March). Preparing to learn from math instruction by solving problems first. In B. Rittle-Johnson & **M. S. DeCaro** (chairs), *When are times for telling? Preparing students to learn from instruction*. Symposium presented at the *Society for Research in Child Development Conference*, Montreal, Canada.
- DeCaro, M. S.**, Albert N. B., Carlson, K. D., Thomas, R. D., & Beilock, S. L. (2010, November). Not all high-pressure situations are the same: Choking under pressure and implicit sensorimotor skill performance. Poster presented at the *Annual Meeting of the Psychonomic Society*, St. Louis, MO.
- DeCaro, M. S.**, & Rittle-Johnson, B. (2010, August). The capacity to discover: Working memory and the ability to use self-explanation to discover early algebra concepts. Poster presented at the *Annual Meeting of the Cognitive Science Society*, Portland, OR.
- DeCaro, M. S.**, & Rittle-Johnson, B. (2010, June). Self-explanation as a tool for discovering early algebra procedures: The importance of working memory capacity. Poster presented at the *Institute of Education Sciences Research Conference*, National Harbor, MD.
- McEldoon, K. L., Rittle-Johnson, B., **DeCaro, M. S.**, & Cho, S. J. (2010, June). Measuring multidimensional mathematical equivalence: A construct modeling approach. Poster presented at the *Institute of Education Sciences Research Conference*, National Harbor, MD.
- Rittle-Johnson, B., Matthews, P., Taylor, R., McEldoon, K., & **DeCaro, M. S.** (2010, March). Understanding the equal sign as a gateway to algebraic thinking. Poster presented at the *NSF REESE PI Meeting*, Washington D.C.
- DeCaro, M. S.**, Wieth, M., & Beilock, S. L. (2009, November). The downside of attentional control: When working memory capacity overshadows insight. Poster presented at the *Annual Meeting of the Psychonomic Society*, Boston, MA.
- Albert, N. B., **DeCaro, M. S.**, & Beilock, S. L. (2009, November). The relationship between working memory capacity and sensorimotor skill learning. Poster presented at the *Annual Meeting of the Psychonomic Society*, Boston, MA.

- DeCaro, M. S.**, Carlson, K. D., Thomas, R. D., & Beilock, S. L. (2008, November). Attentional mechanisms underlying skill failure and success under pressure. Poster presented at the *Annual Meeting of the Psychonomic Society*, Chicago, IL.
- Carlson, K. D., Thomas, R. D., **DeCaro, M. S.**, & Beilock, S. L. (2008, July). Working memory and category learning: Decision bound modeling of individual differences in response strategy. Poster presented at the *Annual Meeting of the Society for Mathematical Psychology*, Washington D. C.
- Beilock, S. L., & **DeCaro, M. S.** (2008, July). On the interplay of emotion and cognition: Individual differences, executive control, and performance under stress. Invited paper presented at the *XXIX International Congress of Psychology*, Berlin, Germany.
- DeCaro, M. S.**, & Beilock, S. L. (2008, June). Working memory, stereotype threat, and performance under stress. Paper presented at the *Society for the Psychological Study of Social Issues*, Chicago, IL.
- DeCaro, M. S.**, Rotar, K. E., Kendra, M. S., & Beilock, S. L. (2008, May). Diagnosing and alleviating the impact of performance pressure on mathematical problem solving. Poster presented at the *Annual Meeting of the Association for Psychological Science*, Chicago, IL. **APS Student Research Award.**
- DeCaro, M. S.**, Thomas, R. D., & Beilock, S. L. (2008, May). Choking under pressure: Multiple routes to skill failure. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.
- DeCaro, M. S.**, Thomas, R. D., & Beilock, S. L. (2007, November). On the multiple routes to skill failure: Distraction, over-attention, and task demands. Poster presented at the *Annual Meeting of the Psychonomic Society*, Long Beach, CA.
- Beilock, S. L., & **DeCaro, M. S.** (2007, November). Choking under pressure: Insights into skill failure and success. Paper presented at the *Annual Meeting of the Psychonomic Society*, Long Beach, CA.
- DeCaro, M. S.**, Thomas, R. D., Kendra, M. S., & Beilock, S. L. (2007, May). Working memory and category learning: When less is more. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL. **Graduate Student Award: Honorable Mention.**
- DeCaro, M. S.**, Thomas, R. D., & Beilock, S. L. (2006, November). Working memory and category learning: Sometimes less is more. Poster presented at the *Annual Meeting of the Psychonomic Society*, Houston, TX.
- DeCaro, M. S.**, & Beilock, S. L. (2006, May). Higher capacity can produce less optimal performance: Working memory, mental set, and strategy selection in math. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.
- Sammons, M. C.**, & Mutter, S. A. (2005, May). Event timing constraints and response-outcome contingency learning: Evidence for an associative memory theory of contingency learning. Paper presented at the *Annual Meeting of the Midwestern Psychological Association*, Chicago, IL.
- Sammons, M. C.**, Mutter, S. A., Plumlee, L., & Strain, L. M. (2004, November). The effects of task timing characteristics on contingency judgments. Poster presented at the *Annual Meeting of the Psychonomic Society*, Minneapolis, MN.
- Strain, L. M., Mutter, S. A., Plumlee, L., & **Sammons, M. C.** (2004, May). The effect of age and prior expectancies on contingency judgments. Poster presented at the *Annual Meeting of the American Psychological Society*, Chicago, IL.
- Mutter, S. A., Haggblom, S. J., Schirmer, A., **Sammons, M. C.**, & Strain, L. M. (2004, April). Aging and the feature positive effect. Poster presented at the *Tenth Cognitive Aging Conference*, Atlanta, GA.
- Sammons, M. C.**, Strain, L. M., & Mutter, S. A. (2003, November). Aging, hypothesis testing, and the feature positive effect. Paper presented at the *Annual Meeting of the Kentucky Academy of Science (KAS)*, Bowling Green, KY. **Griffith Memorial Award in Psychology.**

Schirmer, A., Strain, L. M., **Sammons, M. C.**, & Mutter, S. A. (2003, October). Out of sight, out of mind: Aging and the feature positive effect. Poster presented at the *Annual Meeting of the Kentucky Association of Gerontology (KAG)*, Bowling Green, KY. **Awarded most outstanding poster presentation.**

*Graduate Student First Author

†Undergraduate Student First Author

Teaching Experience

Graduate

Cognitive Processes
Working Memory
Cognition and Education

Undergraduate

Experimental Psychology
Experimental Psychology: Distance Education
Cognitive Psychology
Seminar: Working Memory in Everyday Life
Seminar: Applying Cognitive Psychology to Education

Honors and Awards

Outstanding Graduate Mentor Award, *University of Louisville College of Arts and Sciences*, 2020
Fellow, *Psychonomic Society*, 2015–Present
Faculty Favorite Nominee, *University of Louisville*, 2016, 2017
Academic Achievement Award, *Miami University*, 2007, 2009
Association for Psychological Science (APS) Student Research Award, 2008
Graduate Student Award: Honorable Mention, *Midwestern Psychological Association*, 2007
Griffith Memorial Award in Psychology, *Kentucky Academy of Science*, 2003

Service

Professional and University Service

Interim Director, Experimental Psychology PhD Program, 2022
College of Arts and Sciences Personnel Committee, 2021–Present
Departmental Plans and Policies Committee, *University of Louisville*, 2013–2016, 2022–Present
Psychology Participant Pool Committee, 2016–Present
Department Personnel Committee Chair, 2019–2021
Department Personnel Committee, 2017–2019
Department Website Committee, 2015–2019
College of Arts and Sciences Technology and Facilities Committee, 2016–2019
Facilitator, Grawemeyer Award Winner Book Talk, *University of Louisville*, 2015
Experimental Psychology Program Brown Bag Coordinator, *University of Louisville*, 2014–2015
Colloquium Committee, *University of Louisville*, 2011–2015
Psychology Participant Pool Co-Administrator, *University of Louisville*, 2014
Graduate Curriculum Committee, *University of Louisville*, 2012–2013
Chair, Organizing Committee, *Annual Midwestern Conference on Cognition*, 2008

Panelist, Getting into Graduate School, *Association for Psychological Science (APS)*, 2008
Panelist, Applying to Graduate School, *Psi Chi*, 2006

Professional Development Presentations

DeCaro, M. S. (2021, January). Using the science of learning to inform your tutoring. Invited talk for REACH (Resources for Academic Achievement), *University of Louisville*. Cancelled due to COVID.

DeCaro, M. S., & Fletcher, L. (2021, November, & 2020, October). Translating learning theories into teaching strategies. Invited talk presented at the *University of Louisville Graduate Teaching Academy*, Louisville, KY.

DeCaro, M. S., & Fletcher, L. (2019, October). Cognitive Psychology 101: Applying cognition research to teaching strategies. Invited talk presented at the *University of Louisville Graduate Teaching Academy*, Louisville, KY.

DeCaro, M. S. (2013, February). Exploratory activities in the classroom: A cognitive science perspective. Invited talk presented at the *University of Louisville Celebration of Teaching and Learning*, Louisville, KY.

DeCaro, M. S., & Lyle, K. B. (2012, August). Increasing students' performance: Ideas from cognitive psychology. Invited talk presented at *Liberty High School*, Louisville, KY.

Grant Reviewer

National Science Foundation (IUSE-EHR), 2021
Israel Science Foundation, 2018
University of Chicago, Big Ideas Generator, 2018

Ad hoc Journal Reviewer

American Journal of Psychology
Animal Cognition
Applied Cognitive Psychology
Attention, Perception, & Psychophysics
Basic and Applied Social Psychology
CBE: Life Sciences Education
Cognition
Cognition and Instruction
Cognitive, Affective, and Behavioral Neuroscience
Cognitive Science
Consciousness and Cognition
Contemporary Educational Psychology
Educational Psychology
Educational Psychology Review
European Journal of Psychology of Education
European Psychologist
Experimental Psychology
Games for Health Journal
Instructional Science
Journal of Experimental Child Psychology
Journal of Experimental Psychology: Applied
Journal of Experimental Psychology: General (**Editorial Board** 2011–2017)
Journal of Experimental Psychology: Human Perception and Performance
Journal of Experimental Psychology: Learning, Memory, and Cognition
Journal of Experimental Social Psychology

Journal of Motor Behavior
Journal of Sport & Exercise Psychology
Journal of Visualized Experiments
Learning and Individual Differences
Learning and Instruction
LSE Life Sciences
Memory and Cognition
Methods
Quarterly Journal of Experimental Psychology
Psychological Research
Psychological Science
Psychology of Sport and Exercise
Psychophysiology
Scientific Reports
The Journal of Problem Solving
Thinking and Reasoning

Student Supervision

Graduate Students: Primary Advisor

Katie Golway, 2022–Present
Raina Isaacs, 2021–Present
Ryan Patrick, 2021–Present
Anna Kelley, 2021–Present
Lianda Velić, 2020–Present
Derek McClellan, 2019–Present
Jason Bush (Co-Advisor), 2019–Present
Manooch Saeedi, M. A., 2019
Campbell Rightmyer Bego, Ph.D. 2019
Charles Van Stockum, M.A. 2014, Ph.D. 2019
Joanna Weaver, M. A. 2016, Ph.D. (Co-Chair) 2019
David Bellinger, M.A. 2014, Ph.D. 2016

Graduate Student Committee Member

Olivia Cook, Master's Committee, 2022
Timothy Lau, Dissertation Committee, 2021–Present
Rachel Appel, Master's Committee, 2021, Preliminary Exam, 2022
Jackie Ma, Dissertation Committee, 2020–Present
Megan Norris, Master's Committee, 2020, Preliminary Exam, 2021, Dissertation Committee, 2021–
Allison Williams, Master's Committee, 2019, Preliminary Exam, 2020, Diss. Committee, 2022
Sarah French-Wilde, Master's Committee, 2020, Preliminary Exam, 2022
Anna Kelley, Master's Committee, 2019, Preliminary Exam, 2020
Irina Vanzhula, Dissertation Committee, 2018-2020
Allison Hicks, Dissertation Committee, 2018
Erin Sovansky Winter, University of Illinois Chicago, Dissertation Committee, 2018-2019
Elena Geronimi, Dissertation Committee, 2019
Kala Phillips, Dissertation Committee, 2018
Marcus Leppanen, Master's, Dissertation Committees, 2015-2018
Robin Hopkins, Master's, Preliminary Exam, Dissertation Committees, 2015-2018

Sophia Searcy, Dissertation Committee, 2016
Nicholas Holt, Master's Committee, 2013, Dissertation Committee, 2016
Campbell Rightmyer, Master's Committee, 2016
Holly Knight, Dissertation Committee, 2015
Lauren Vines, Dissertation Committee, 2014
Ryan Hacklaender, Dissertation Committee, 2013
J. Matthew Edlin, Dissertation Committee, 2013
Baxter Eaves, Master's Committee, Preliminary Exam Committee, 2013

Undergraduate Honors Students and Award Winners

Olivia Kaiser, 2021–Present: Mentored Research Award, Honor's Thesis
Kaci Ayer, 2021–Present: Mentored Research Award
Meg Powers, 2021–Present: Honors Thesis
Shannon Derkson, 2019–2020: Honor's Thesis, Summer Research Opportunity Program
Lianda Velic, 2018–2019: Honors Thesis, Undergraduate Research Grant, Summer Research Opportunity Program
Phillip Newman, 2016–2017: Honors Thesis, Undergraduate Research Grant, Heuermann Award, Seely Outstanding Senior Award
Lauren Grant, 2014–2015: Honors Thesis, Undergraduate Research Grant
Mary Alter, 2014: Honors Thesis, Undergraduate Research Grant
Elizabeth Camfield, 2013: Honors Thesis, Undergraduate Research Grant
Sandra Hutzler, 2012–2013: Honors Thesis, Undergraduate Research Grant
Megan Smith, 2011–2013: Honors Thesis, Psi Chi Research Grant, Undergraduate Research Grant
Kristin Rotar, 2008: Honors Thesis, Undergraduate Research Award, Miami University
Matthew Kendra, 2007: Honors Thesis, Undergraduate Research Award, Miami University
Andrea Mankins, 2007: Undergraduate Research Award, Miami University
Melissa Borkon, 2006: Honors Thesis, DUOS Grant, Undergraduate Research Award, Miami

Undergraduate Honors Thesis Committee Member

Mallory Thompson, 2022
Hailey Streble, 2021
Jason Bush, 2019
Tesnim Arar, 2019
Rachael Crenshaw, 2018
Justin Erickson, 2018
Kailin Kinney, 2018
Samantha Melton, 2018
Savannah Neace, 2018
Ha Nguyen, 2017
Lauren Dale, 2017
Carli Mosby, 2015
Jenny Simpson, 2014
Divine-Favour Ekene Anene, 2014
Laura Pait, 2013
Elana Reiderman, 2012, Miami University

Select Media Coverage

UofL News, 2019
UofL Today Radio Show, March 2018, April 2018

LearningScientists.org, March 2018
Harvard Business Review, August 2015
NeuroNet Learning Research Blog, 2015
Chalkbeat TN, August 2014
BabyCenter, January 2014
Reflex Magazine, June 2012
Msnbc.com, August 2011
Huffington Post, August 2011
KFWB News/Talk 980 (CBS, Los Angeles), August 2011