

THOMAS F. SHIPLEY

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Education:

Ph.D., University of Pennsylvania, Psychology, 1988
M.A., University of Pennsylvania, Psychology, 1983
B.A., Honors, Swarthmore College, 1982

Positions:

Professor, Temple University, 2018-present
Associate Professor, Temple University, 1999-2018
Director of Undergraduate Studies, 2007-2010
Visiting Professor, University of the Mediterranean, 2004-2005
Assistant Professor, Temple University, 1993-1999
Adjunct Fellow, Institute for Behavioral Research, University of Georgia, 1992-93
Assistant Professor, University of Georgia, Athens, 1991-1993
Post-Doctoral Fellow, Swarthmore College, 1988-1991

Honors and Awards:

Sigma Xi
Phi Beta Kappa
Dean's Fellow, University of Pennsylvania, 1983-84 and 1984-85
Temple University's nominee for 1995 NSF Presidential Faculty Fellow Award
Co-Chair Cognitive Science Society meeting 2011
Outstanding Paper award from *Journal of Geoscience Education* for Evaluating
Geoscience Students' Spatial Thinking Skills in a Multi-Institutional Classroom
Study. 2015.
Northern Illinois University External Mentorship Program 2016-2017 - Mentor to Dr.
Nicole LaDue.
The Collaboration Award from Geoscience Education Research division of National
Association of Geoscience Teachers. 2018.
Elected to co-chair 2023 Gordon Research Conference on Visualization (vice-chair for
2021 conference).

Grants:

National Science Foundation Graduate Fellowship, 1982-85
Co-Principal Investigator on National Science Foundation Grant, BNS 89-13707:
"Spatial interpolation in visual object perception," 1990-1991

- Principal Investigator on National Science Foundation Grant, BNS 93-96309: "Spatial and temporal interpolation in visual object perception," 1992-1998, \$240,000
National Science Foundation REU supplement to BNS 93-96309 for Summer 1995 and Summer 1996
- Co-Principal Investigator on National Eye Institute Grant, RO1 EY13518: "Spatial and temporal interpolation in visual object perception," 480,000; 2/2001-2/2006.
- Co-Principal Investigator on National Science Foundation Grant, BCS-0642529, "The path to verb learning". (PI Kathy Hirsh-Pasek). \$443,695; 2006-2009.
- Core Investigator on National Science Foundation Grant, SBE-0541957, "Spatial Intelligence and Learning Center" (PI Nora Newcombe). \$15,500,000 total. 2006-2011.
- Co-Principal Investigator on National Science Foundation Grant, BCS-0642404, "A developmental social neuroscience approach to perception-action relations" (PI Peter Marshall), \$437,299; 2007-2011.
- Principal Investigator on National Science Foundation Grant, SBE-0823557, "International Workshop on Spatial Cognition and Learning." \$97,432 (\$19,000 international student supplement); 2008-2010.
- Co-Principal Investigator on National Science Foundation Grant, DRL-0815245, "Teaching Effective Use of Diagrammatic Reasoning in Biology" (PI Jennifer Cromley). \$1,000,000; 2009-2012.
- Co-Principal Investigator on National Science Foundation Grant, DUE-1044245, Transforming Undergraduate Education Program "Developing and Testing Materials to Improve Spatial Skills in Upper Division Geoscience Courses" (PI Cathy Manduca), \$174,800, 2011-2014.
- Collaborator on "AniMOVE: animated visual analytics of movement," funded by the Swiss National Science Fund (SNF), (PI Sara Fabrikant), CHF 163,896. 2011-2014.
- Core Investigator on National Science Foundation Grant, SBE-1041707, "Spatial Intelligence and Learning Center" (PI Nora Newcombe). \$18,000,000, 2011-2016.
- Co-Principal Investigator on National Institute of Health Grant, 1R21HD068734, "Infants' Processing of Actions and Goals: A Social Neuroscience Approach" (PI Peter Marshall) \$421,000, 2011-2013
- Principal Investigator on National Science Foundation Grant, DRL-1331505, "Collaborative Research: FIRE: Making Meaning from Geoscience Data: A Challenge at the Intersection of Geosciences and Cognitive Sciences" (Mentor to PI Kim Kastens), \$399,000; 2011-2014
- Co-Principal Investigator on Institute of Education Sciences' (IES) Education Research Grants, R305A120471, "Coordinating Multiple representation: A comparison of gaze patterns in high school students who do and do not enroll in Calculus" (PI Jennifer Cromley), \$906,433; 2012-2015
- Co-Principal Investigator on National Science Foundation Grant, Research Coordination Network, ICER-1340265, "EC3 - Earth Centered Communication For Cyberinfrastructure: Challenges of field data collection, management, and integration." (PI Matty Mookerjee); \$299,329; 2013-2015
- Co-Principal Investigator on National Science Foundation Grant, SBE-1358852, REU Site: Spatial Intelligence and Learning REU Program. (PI Nora Newcombe), \$288,000; 9/1/2014-8/31/2015

- Co-Principal Investigator on National Science Foundation Grant, IIS-1514882, “NRI: Collaborative: Legged locomotion for desert research.” (PI Daniel Koditschek); \$1,000,000, 10/1/2015-9/30/2017
- Principal Investigator on National Science Foundation Grant, SBE-1640800, “SL-CN: Understanding and Promoting Spatial Learning Processes in the Geosciences.” \$749,712; 9/1/2016-8/31/2019.
- Principal Investigator on National Science Foundation Grant, DRL-1743234, “Educating skillful visualizers.” \$49,935; 5/1/2017-4/30/2018
- Principal Investigator on National Science Foundation Grant, SBE-1745744, “Building Community for Convergence Research in the Science of Learning and Beyond ” \$49,987 (\$8,584 to Temple); 10/1/2017-9/30/2018
- Principal Investigator on National Science Foundation Grant, ECCS-1734365, “NRI: INT: COLLAB: Co-Robotics Systems for GeoSciences Field Research” (PI for University of Pennsylvania portion, Daniel Koditschek; \$1,500,000 total (\$423,878 to Temple)); 9/1/2017-8/31/2020
- Principal Investigator on National Science Foundation Grant, DUE-1839705, “Collaborative Research: FW-HTF: Integrating Cognitive Science and Intelligent Systems to Enhance Geoscience Practice” (\$1,499,844 total budget, \$499,852 to Temple); 10/1/2018-9/30/2021
- Co-Principal Investigator on National Science Foundation Grant, DUE-1835950, “GeoClick: The Value of Click-on-Diagram Questions in Geoscience” (\$300,000 Total budget; \$22,500 to Temple); 10/1/2018-9/30/2021
- Principal Investigator on United States Geological Survey Grant G20AP00104, “Assessment of user’s understanding of real-time earthquake information products: Collaborative Research with Miami University, and Temple University” (\$43,690); 7/1/2020-6/30/2021
- Co-Principal Investigator on a Presidential Humanities and Arts Program Collaborative Award from Temple University’s Office of the Vice President for Research, “*Citizen Science for Machine Learning of Earth Surface Features*,” (PI is Alexandra Davatzses); \$16,540; 11/1/19-10/31/21.
- Co-Principal Investigator on NASA Planetary Science and Technology Through Analog Research Program (PSTAR) grant, 21-PSTAR21_2-0015, LASSIE: Legged Autonomous Surface Science In Analogue Environments (\$3,000,000 total budget, \$224,000 to Temple); 7/1/2022-6/30/2025
- Principal Investigator on National Science Foundation Grant, DUE- 2142010, “Supporting Feedback Loop Learning in Natural and Social Science Courses” (\$214,191 to Temple); 10/1/2022-9/30/2024
- PI of subaward on National Science Foundation Grant, DUE- 2225637, Building Capacity for Investigating the Use of Spatial Reasoning in Fluid-Earth Science Disciplines, (total award to Towson \$233,309, \$52,969 to Temple); 01/01/2023-12/31/2024
- Principal Investigator on National Science Foundation Grant, OAC- 2311820, Collaborative Research: Frameworks: Automated Quality Assurance and Quality Control for the StraboSpot Geologic Information System and Observational Data, (\$401,681 to Temple); 09/01/2023-8/31/2027
- Principal Investigator on National Science Foundation Grant, DUE-2413371 recommended for funding, Collaborative Research: EAGER: Cognition in the Wild:

Understanding how students and experts reason about atmospheric processes (\$80,000 to Temple); 09/01/2024-8/31/2026.

Publications:

Books:

Shipley, T.F. & Kellman, P. J. (Eds.) (2001). *From Fragments to Objects: Segmentation and Grouping in Vision*. Amsterdam, The Netherlands: Elsevier Science.

Shipley, T. F. & Zacks, J. (2008) *Understanding Events: From Perception to Action*. Edited book. Oxford University Press.

Hoelscher, C. Shipley, T.F. Bateman, J., Olivetti, M. & Newcombe, N. (2010) *Spatial Cognition VII. Lecture Notes in Computer Science*, Springer-Verlag, Berlin.

Carlson, L., Hoelscher, C., & Shipley, T.F. (Eds.), (2011) *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Chapters:

Shipley, T. F. (1991). Perception of a unified world: The role of discontinuities. In Donna Jo Napoli & Judy Anne Kegl (Eds.), *Bridges between psychology and linguistics: A Swarthmore Festschrift for Lila Gleitman* (pp. 55-88). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Shipley, T. F. (2000). Perception of persistence: Stability and change. In Barbara Landau, John Sabini, Elissa Newport, & John Jonides (Eds.), *Perception, Cognition, and Language: Essays In Honor of Henry and Lila Gleitman*. Cambridge MA: MIT Press.

Shipley, T.F. & Cunningham, P. J. (2001). Spatiotemporal object perception. In Shipley, T.F. & Kellman, P. J. (Eds.) *From Fragments to Objects: Segmentation and Grouping in Vision*. (pp. 557-585). Amsterdam, The Netherlands: Elsevier Science.

Shipley, T. F. (2008) An invitation to an event. In Shipley, T.F. & Zacks, J. M. (Eds) *Understanding Events: From Perception to Action*. Oxford University Press.

Shipley, T. F. & Maguire, M. (2008) A geometrical approach to event segmentation. In Shipley, T.F. & Zacks, J. M. (Eds) *Understanding Events: From Perception to Action*. Oxford University Press.

Berryhill, M. Hoelscher, C. & Shipley, T.F. (2012) Spatial Perception. Invited chapter for the *Encyclopedia of Human Behavior*, 2nd Edition. (pp 525-530). Academic Press.

- Shipley, T.F., Fabrikant, S.I., & Lautenschütz, A.K. (2013). Creating perceptually salient animated displays of spatially coordinated events. *Cognitive and Linguistic Aspects of Geographic Space: Las Navas 2010*, Springer Verlag.
- Newcombe, N. S & Shipley, T. F. (2014, November). Thinking about spatial thinking: New typology, new assessments. In J. S. Gero (ed.), *Studying visual and spatial reasoning for design creativity* (pp.179-192). Springer..
- Atit, K., Shipley, T.F., & Tikoff, B., (2014, December). A framework for classifying spatial gestures. In D. R. Montello, K. Grossner, K., & D. G. Janelle (Eds.), *Space in mind: Concepts for spatial learning and education* (pp. 173-194). Cambridge, MA: MIT Press.
- Shelton, A., Marchette, S., Hölscher, C., Nelligan, B., Shipley, T.F., & Carlson, L. (2016). Why people get lost in the Seattle Central Library. In *Take One Building: Interdisciplinary Research Perspectives of the Seattle Central Library*. Edited by Ruth Conroy Dalton and Christoph Hölscher.
- Shipley, T.F. & Tikoff, B., (2016). Linking cognitive science and disciplinary geoscience practice: The importance of the conceptual model. In Krantz, R.W, Ormand, C.J., and Freeman, B., eds., *3D Structural Interpretation: Earth, Mind, and Machine*, American Association of Petroleum Geologists memoir 111 (Hedberg Series number 6, August), p. 219-237.
- Gagnier, K.M., Shipley, T., F., Tikoff, B., Garnier, B., Ormand., C.J., Atit, K., & Resnick, I., (2016, August). Training Spatial Skills in Geosciences: A Review of Tools and Tests. In Krantz, R.W, Ormand, C.J., and Freeman, B., eds., *Earth, Mind, and Machine: 3D Structural Interpretation*, American Association of Petroleum Geologists memoir 111, Hedberg Series number 6. p. 7-23.
- Tarampi, M. R., Atit, K., Petcovic, H. L., Shipley, T. F. & Hegarty, M., (2016). Spatial Skills in Expert Structural Geologists. In R. W. Krantz, C. J. Ormand & B. Freeman (Eds.), *Earth, Mind, and Machine: 3D Structural Interpretation*: American Association of Petroleum Geologists memoir 111, Hedberg Series, number 6. p. 65-73.
- Ryker, Katherine; Jaeger, Allison J.; Brande, Scott; Guereque, Mariana; Libarkin, Julie; and Shipley, Thomas F. (2018). "Research on Cognitive Domain in Geoscience Learning: Temporal and Spatial Reasoning". In St. John, K (Ed.) (2018). *Community Framework for Geoscience Education Research*. National Association of Geoscience Teachers. https://doi.org/10.25885/ger_framework/7
- Shipley, T. F. & Shipley, N.H., (2020, June). "Measuring Spatial Thinking in Architecture: The Value of Psychometric Tests". In Gerber, A. *Training spatial abilities: A Handbook for Architects*. Birkhäuser, Basel. 48-50.
- LaDue N.D., Shipley T.F. (2020, January) Click-on-Diagram Questions: Using Clickers to Engage Students in Visual-Spatial Reasoning. In: Mintzes J., Walter E. (eds) *Active Learning in College Science*. Springer, Cham. 159-171. https://doi.org/10.1007/978-3-030-33600-4_11

Tikoff, B., Nelson, E.M., Gordon, S.M., and Shipley, T.F., (2025, November), Using salience to compare different tectonic models for western North America, in Gordon, S.M., Miller, R.B., Rusmore, M.E., and Tikoff, B., eds., *Jurassic–Paleogene Tectonic Evolution of the North American Cordillera: Geological Society of America Special Paper 565*, p. 1–13, [https://doi.org/10.1130/2025.2565\(01\)](https://doi.org/10.1130/2025.2565(01)).

Refereed Articles:

Voet, J.G., Coe, J., Epstein, J., Matossian, V., & Shipley, T. (1981). Electrostatic control of enzyme reactions: effect of ionic strength on the pKa of an essential acidic group on glucose oxidase. *Biochemistry* 20 (25), 7182-7185

Shipley, T. F. & Kellman, P. J. (1990). The role of discontinuities in the perception of subjective figures. *Perception & Psychophysics*, 48, 259-270.

Kellman, P. J. & Shipley, T. F. (1991). A theory of visual interpolation in object perception. *Cognitive Psychology*, 23, 141-221.

Shipley, T. F. & Kellman, P. J. (1992). Perception of partly occluded objects and illusory figures: Evidence for an identity hypothesis. *Journal of Experimental Psychology: Human Perception and Performance*, 18, 106-120.

Shipley, T. F. & Kellman, P. J. (1992). Strength of visual interpolation depends on the ratio of physically-specified to total edge length. *Perception & Psychophysics*, 52, 97-106.

Kellman, P. J. & Shipley, T. F. (1992). Perceiving objects across gaps in space and time. *Current Directions in Psychological Science*, 1, 193-199.

Shipley, T. F. & Kellman, P. J. (1993). Optical tearing in spatiotemporal boundary formation: When do local element motions produce boundaries, form and global motion? *Spatial Vision*, 7, 323-339.

Shipley, T. F. & Kellman, P. J. (1994). Spatiotemporal boundary formation: Boundary, form, and motion perception from transformations of surface elements. *Journal of Experimental Psychology: General*, 123, 3-20.

Shipley, T. F. & Kellman, P. J. (1997). Spatiotemporal boundary formation: The role of local motion signals in boundary perception. *Vision Research*, 37, 1281-1293.

Yin, C., Kellman, P. J., & Shipley, T. F. (1997). Surface completion complements boundary interpolation. *Perception*, 26, 1459-1479.

Cunningham, D. W., Shipley, T. F. & Kellman, P. J. (1998). The dynamic specification of surfaces and boundaries. *Perception*, 27, 403-415.

- Cunningham, D. W., Shipley, T. F., & Kellman, P. J. (1998). Interactions between spatial and spatiotemporal information in spatiotemporal boundary formation. *Perception & Psychophysics*, *60*, 839-851.
- Kellman, P. J., Yin, C., & Shipley, T. F. (1998). A common mechanism for illusory and occluded object completion. *Journal of Experimental Psychology: Human Perception and Performance*, *24*, 859-869.
- Field, D., Shipley, T. F., & Cunningham, D. W. (1999). Generalization gradients in prism adaptation to dynamic stimuli. *Perception & Psychophysics*, *61*, 161-176.
- Shipley, T. F., & Cohen, L. (2000). Perception of affordances in point light displays. *Ecological Psychology*, *12*, 87-92.
- Yin, C., Kellman, P.J. & Shipley, T.F. (2000). Surface integration influences depth discrimination. *Vision Research*, *40*, 1969-1978.
- Shipley, T.F. (2003). The effect of object and event orientation on perception of biological motion. *Psychological Science*, *14*, 377-380.
- Shipley, T.F. & Kellman, P.J. (2003). Boundary completion in illusory contours: Interpolation or Extrapolation? *Perception*, *32*, 985-1000.
- Kellman, P. J., Garrigan, P., Shipley, T. F., Yin, C., & Machado, L. (2005). 3-D interpolation in object perception: Evidence from an objective performance paradigm. *Journal of Experimental Psychology: Human Perception & Performance*, *31*, 558-583.
- Kellman, P. J., Garrigan, P., & Shipley, T. F. (2005). Object interpolation in three dimensions. *Psychological Review*, *112*, 586-609.
- Palmer, E. M., Kellman, P. J., & Shipley, T. F. (2006). A theory of dynamic occluded and illusory object perception. *Journal of Experimental Psychology: General*, *135*, 513-541.
- Bouquet, C.A., Gaurier V., Shipley, T. , Toussaint, L., & Blandin, Y. (2007) Influence of the perception of biological or non-biological motion on movement execution. *Journal of Sports Sciences*, *25*, 25-36.
- Kellman, P.J., Garrigan, P.B., Shipley, T.F. & Keane, B.P. (2007). Postscript: Identity and constraints in models of object formation. *Psychological Review*, *114*, 502-508.
- Kellman, P.J., Garrigan, P.B., Shipley, T.F. & Keane, B.P. (2007). Interpolation processes in object perception: A reply to Anderson. *Psychological Review*, *114*, 488-508.
- Marshall, P. J., & Shipley, T. F. (2009). Event-related potentials to point-light displays of human actions in 5-month-old infants. *Developmental Neuropsychology*, *34*(3), 368-377.

- Marshall, P., Bouquet, C., Shipley, T., & Young, T. (2009). Effects of brief imitative experience on EEG desynchronization during action observation. *Neuropsychologia*, 47(10), 2100-2106.
- Jee, B. D., Uttal, D. H., Gentner, D., Manduca, C., Shipley, T., Sageman, B., Ormand, C. J., & Tikoff, B. (2010). Analogical thinking in geoscience education. *Journal of Geoscience Education*, 58 (1), 2-13.
- Holden, M., Curby, K., Newcombe, N. & Shipley, T.F., (2010). Spatial Memory: Hierarchical encoding of location in natural scenes. *Journal of Experimental Psychology: Learning Memory & Cognition*, 36(3), 590-604
- Hegarty, M., Crookes, R.D., Dara-Abrams, D., & Shipley, T.F., (2010). Do all science disciplines rely on spatial abilities? Preliminary evidence from self-report questionnaires. C. Hoelscher, T.F. Shipley, J. Bateman, M. Olivetti, & N. Newcombe (Eds.): *Spatial Cognition VII. Lecture Notes in Computer Science* (pp 85-94.) Lecture notes in Artificial Intelligence series. Springer-Verlag, Berlin.
- Nardi, D. Newcombe, N., & Shipley, T.F. (2010). The role of slope in human reorientation. C. Hoelscher, T.F. Shipley, J. Bateman, M. Olivetti, & N. Newcombe (Eds.): *Spatial Cognition VII. Lecture Notes in Computer Science Springer*. (pp 32-40.) Lecture notes in Artificial Intelligence series. Springer-Verlag, Berlin.
- Carlson, L., Hoelscher, C., Shipley, T.F., & Conroy Dalton, R., (2010). Getting lost in buildings, *Current Directions in Psychological Science*, 19(5), 284-289
- Nardi, D., Newcombe, N. S., & Shipley, T. F. (2011). The World Is Not Flat: Can People Reorient Using Slope?. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37, 354-367.
- Marshall, P. J., Bouquet, C. A., Thomas, A. L., & Shipley, T. F. (2011). Motor contagion in young children: Exploring social influences on perception-action coupling in early childhood. *Neural Networks*, 23, 1017-1025.
- Bouquet, C. A., Shipley, T. F., Capa, R. L., & Marshall, P. J. (2011). Motor contagion: Goal-directed actions are more contagious than non-goal-directed actions. *Experimental Psychology*, 58, 71-78.
- Capa, R.L., Marshall, P. J., Shipley, T. F., Salesse, R. N., & Bouquet, C. A. (2011). Does Motor Interference Arise from Mirror System Activation? The Effect of Prior Visuo-Motor Practice on Automatic Imitation. *Psychological Research*, 75, 152-157.
- Roseberry, S., Richie, R., Hirsh-Pasek, K., Golinkoff, R., & Shipley, T. (2011). Babies catch a break: 7- to 9-month-olds track statistical probabilities in continuous dynamic events. *Psychological Science*, 22(11), 1422-1424.
- Resnick, I., Atit, K., Shipley, T.F., (2011). Teaching Geological Events to Understand Geological Time, in Kastens, K.A., and Manduca, C.A., eds., *Earth and Mind II: A*

Synthesis of Research on Thinking and Learning in the Geosciences: Geological Society of America Special Paper 486, doi:10.1130/2012.2486(08).

- Maguire, M., Shipley, T. F., Brumberg, J., & Ennis, M. (2011). Similarities in object and event segmentation: A geometric approach to spatiotemporal path segmentation. *Spatial Cognition and Computation*, 11, 254-279.
- Quandt, L. C., Marshall, P. J., Bouquet, C. A., Young, T., & Shipley, T. F. (2011). Experience with novel actions modulates frontal alpha EEG desynchronization. *Neuroscience Letters*, 499, 37-41
- Quandt, L.C., Marshall, P.J., Shipley, T.F., Beilock, S.L., & Goldin-Meadow, S. (2012). Sensitivity of alpha and beta oscillations to sensorimotor characteristics of action: An EEG study of action production and gesture observation. *Neuropsychologia*, 50(12), 2745-51.
- Resnick, I., Shipley, T., Newcombe, N., Massey, C., Wills, T. (2012). Examining the Representation and Understanding of Large Magnitudes Using the Hierarchical Alignment model of Analogical Reasoning. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 917-922). Austin, TX: Cognitive Science Society.
- Nardi, D., Newcombe, N. S., & Shipley, T. F. (2013). Reorienting with terrain slope and landmarks. *Memory and Cognition*, 41 (Feb), 214-228. DOI 10.3758/s13421-012-0254-9
- Göksun, T., Goldin-Meadow, S. Newcombe, N., Shipley, T.F. (2013). Individual differences in mental rotation: What does gesture tell us? *Cognitive Processing*, 14(May), 153-162.
- Atit, K., Shipley, T.F., & Tikoff, B., (2013). Twisting space: Are rigid and non-rigid mental transformations separate spatial skills? *Cognitive Processing*, 14(2, May), 163-173.
- Resnick, I. & Shipley, T.F., (2013). Breaking new ground in the mind: An initial study of mental brittle transformation and mental rigid rotation in science experts. *Cognitive Processing*, 14(2, May), 143-152.
- Jee, B. D., Uttal, D. H, Gentner, D., Manduca, C., Shipley, T., Sageman. (2013). Finding faults: Analogical comparison supports spatial concept learning in geoscience. *Cognitive Processing*, 14(2, May), 175-187.
- Khooshabeh, P., Hegarty, M. & Shipley, T.F. (2013). Individual Differences in Mental Rotation: Piecemeal vs. Holistic Processing. *Experimental Psychology*, 60(3 May), 164-171.
- Schinazi, V.R., Nardi, D. Newcombe, N.S., Shipley, T.F., & Epstein, R.A. (2013). Hippocampal size predicts learning of a cognitive map in humans. *Hippocampus*, 23(6, June): 515-528.
- Holden, M., Newcombe, N., Shipley, T.F. (2013). Location Memory in the Real World: Category Adjustment Effects in 3-Dimensional Space. *Cognition*, 128 (July), 45-55.

- Cromley, J.G., Bergey, B.W., Fitzhugh, S., Newcombe, N., Wills, T.W., Shipley, T.F., Tanaka, J.C., (2013). Effects of three diagram instruction methods on transfer of diagram comprehension skills: The critical role of inference while learning. *Learning and Instruction*, 26 (August), 45-58
- Shipley, T., Tikoff, B., Manduca, C., Ormand, C. J. (2013). Structural Geology practice and learning, from the perspective of cognitive science. *Journal of Structural Geology*, 54 (August), 72-84
- Quandt, L. C., Marshall, P. J., Bouquet, C. A., & Shipley, T. F. (2013). Somatosensory experiences modulate alpha and beta power during subsequent action observation. *Brain Research*, 1534 (September), 55-65. doi: 10.1016/j.brainres.2013.08.043
- Weisberg, S.M., Schinazi, V.R., Newcombe, N.S., Shipley, T.F., & Epstein, R.A. (2014) Variations in cognitive maps: Understanding individual differences in navigation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. 40(3, May), 669-682.
- Ormand, C. J., Manduca, C., Shipley, T. F., Tikoff, B., Harwood, C. L., Atit, K., & Boone, A. P. (2014). Evaluating Geoscience Students' Spatial Thinking Skills in a Multi-Institutional Classroom Study. *Journal of Geoscience Education*, 62, (1, February), 146-154.
- Weisberg, S.M., Nardi, D., Newcombe, N.S. & Shipley, T.F. (2014). Up by Upwest: Is Slope like North? *Quarterly Journal of Experimental Psychology*. 67(10, October), 1959-1976.
- Jee, B. D., Gentner, D., Uttal, D. H, Sageman, B., Forbus, K., Manduca, C., Ormand, C. J., Shipley, T., & Tikoff, B. (2014). Drawing on experience: How domain knowledge is reflected in sketches of scientific structures and processes. *Research in Science Education*. 44 (6, December), 859-883. DOI 10.1007/s11165-014-9405-2.
- Atit, K., Gagnier, K., & Shipley, T. F., (2015). Students' gestures help their penetrative thinking skills. *Journal of Geoscience Education*, 63 (1, February), 66-72.
- Holden, M.P., Newcombe, N.S., & Shipley, T.F., (2015). Categorical biases in spatial memory: the role of certainty. *Learning, Memory, and Cognition*, 41(2, March), 473-481.
- Mookerjee, M., Vieira, D., Chan, M.A., Gil, Y., Goodwin, C., Shipley, T.F., & Tikoff, B., (2015). We Need to Talk: Facilitating communication between field-based geoscience and cyberinfrastructure communities. *GSA Today*, 25(11, November), 34-35.
- Newcombe, N.S., Weisberg, S.M., Atit, K., Jacovina, M.E., Ormand, C.J. & Shipley, T.F. (2015). The lay of the land: Sensing and representing topography. *Perspectives on Spatial Cognition (2015); The Baltic International Yearbook of Cognition, Logic and Communication*, Vol. 10. December, 1-57.
- Holden, M.P., Newcombe, N.S., Resnick, I., & Shipley, T.F., (2016). Seeing like a geologist: Bayesian use of expert categories in location memory. *Cognitive Science*, 40(2, March), 440-454.

- Kastens, K.A., Shipley, T.F., Boone, A.P., Straccia, F., (2016). What geoscience experts and novices look at, and what they see, when viewing data visualizations. *Journal of Astronomy & Earth Science Education*, 1 (3, May), p. 27-58.
- Atit, K., Weisberg, S.M., Newcombe, N.S., Shipley, T.F., (2016, October). Learning to Interpret Topographic Maps: Understanding Layered Spatial Information. *Cognitive Research: Principles and Implications*, 1(1), 1-18.
- Gagnier, K., Shipley, T.F., (2016, October) Visual completion from 2D cross-sections: Implications for visual theory and STEM education and practice. *Cognitive Research: Principles and Implications*, 1(1), 1-18.
- Harold, J., Lorenzoni, I., & Shipley, T.F., Coventry, K., (2016, December). Cognitive and psychological science insights to improve climate change data visualisation. *Nature Climate Change*. 6 (December), 1080-1089.
- Zahner, W., Dai, T., Cromley, J., Wills, T., Booth, J., Shipley, T., & Stepnowski, W. (2017, January). Relation of Spatial Skills to High School Calculus Proficiency: A Brief Report. *Mathematical Thinking and Learning*, 19(1), 55-68.
- Resnick, I., Davatzes, A., Newcombe, N. S., & Shipley, T. F. (2017, March). Using Relational Reasoning to Learn about Scientific Phenomena at Unfamiliar Scales [Special issue]. *Educational Psychology Review*, 29(1), 11-25.
- Resnick, I., Newcombe, N., & Shipley, T.F., (2017, May). Dealing with big numbers: Representation and understanding of magnitudes outside of human experience. *Cognitive Science*, 41(4), 1020-1041.
- Zahner, W., Dai, T., Cromley, J. G., Wills, T. W., Booth, J. L., Shipley, T. F., & Stepnowski, W. (2017, June). Coordinating multiple representations of polynomials: What do patterns in students' solution strategies reveal? *Learning and Instruction*, 49(June), 131–141.
<https://doi.org/10.1016/j.learninstruc.2017.01.007>
- Qian, F., Jerolmack, D., Lancaster, N., Nikolich, G., Reverdy, P., Roberts, S., Shipley, T.F., Van Pelt, R.S., Zobeck, T.M., Koditschek, D.E., (2017). Ground Robotic Measurement of Aeolian Processes. *Aeolian Research*, 27 (August), 1-11.
- Garnier, B., Chang, M., Ormand, C., Matlen, B., Tikoff, B., Shipley, T.F., (2017). Promoting sketching in introductory geoscience courses: CogSketch geoscience worksheets. *Topics in Cognitive Science*, 9 (4, October), 943-969.
- Gagnier, K. M., Atit, K., Ormand, C. J., & Shipley, T. F. (2017). Comprehending Diagrams: Sketching to Support Spatial Reasoning. *Topics in Cognitive Science*, 9 (4, October), 883-901.
- Shipley, T.F., McConnell, McNeal, K.S., Petcovic, H.L., St John, K.E., (2017). Transdisciplinary science education research and practice: Opportunities for GER in a

developing STEM discipline based education research alliance (DBER-A), *Journal of Geoscience Education*. 65:4(November), 354-362

Shipley, T.F., & Tikoff, B., (2017). The role of geoscience education research in the consilience between science of the mind and science of the natural world. *Journal of Geoscience Education*, 65:4(November), 393-398

Ormand, C. J., Shipley, T.F., Tikoff, B., Dutrow, B., Goodwin, L., Hickson, T., Atit, K., Gagnier, K., Resnick, I. (2017). The Spatial Thinking Workbook: Developing Students' Spatial Thinking Skills in Upper-Level Undergraduate Geology Courses Through Curricular Materials Based on Cognitive Science Research. *Journal of Geoscience Education*, 65:4(November), 423-434.

Cheek, K. A., LaDue, N.D., & Shipley, T.F., (2017). Learning about Spatial and Temporal Scale: Current Research, Psychological Processes, and Classroom Implications. *Journal of Geoscience Education*, 65:4 (November), 455-472.

Jaeger, A.J., Shipley, T.F., & Reynolds, S.J., (2017). The roles of working memory and cognitive load in geoscience learning. *Journal of Geoscience Education*, 65:4(November), 506-518.

Resnick, I., Davatzes, A., Newcombe, N. S., & Shipley, T. F. (2017, December). Using analogy to learn about phenomena at scales outside of human perception. *Cognitive Research: Principles and Implications*, 2, 1-21.

Resnick, I., Kastens, K., Shipley, T.F., (2018). How students reason about visualizations from large professionally collected data sets: A study of students approaching the threshold of data proficiency. *Journal of Geoscience Education*, 66, 1(February), 55-76.

Davatzes, A., Ganier, K., Resnick, I., & Shipley, T.F., (2018, February) "A Cycle of Prediction, Comparison, and Feedback Supports Spatial Learning in Geoscience" *EOS*, 99.

Myer, R., Davatzes, A., & Shipley, T.F., (2018, May). Reasoning about time from space: Visual continuity may disrupt reasoning about the passage of time within accreted materials. *Journal of Geoscience Education*. 66(2), 147-165.

Carbonell-Carrera, C., Jaeger, A.J., Shipley, T.F., (2018, May). 2D cartography training: Has the time come for a paradigm shift? *ISPRS International Journal of Geo-Information* 7 (5), 197

Holmes, C., Newcombe, N.S., Shipley, T.F., (2018, September). Move to learn: Integrating spatial information from multiple viewpoints. *Cognition*, 178, 7-25.

Jaeger, A. J., Velazquez, M. N., Dawdanow, A., & Shipley, T. F. (2018, October). Sketching and summarizing to reduce memory for seductive details in science text. *Journal of Educational Psychology*, 110(7), 899-916.

- McLaughlin, J., Holzer, M., Lombardi, D., Davatzes, A., Jaeger, A., Shipley, T.F. (2018, November). What's Hidden Beneath? Using Spatial Sketching and Feedback to Help Deepen Students' Understanding of Earth's Subsurface *The Science Teacher*, 54-60. (November/December 2018)
- LaDue, N., & Shipley, T.F., (2018, November). Click-On-Diagram Questions: A New Tool to Study Conceptions using Classroom Response Systems. *Journal of Science Education and Technology*. 27(6), 492-507
- Rycroft, S.S., Giovannetti, T., Shipley, T.F., Hulswit, J., Divers, R., Reilly, J. (2018, December). Windows to Functional Decline: Naturalistic Eye Movements in Older and Younger Adults. *Psychology and Aging* 33(8), 1215-1222.
- Brudzinski, M. R., Jaeger, A., Shipley, T.F., (2019, July). Challenges in making meaning from Ground Motion Visualizations: The role of geoscience knowledge in interpreting dynamic spatiotemporal patterns, *Seismological Research Letters*, 90 (4), 1692-1701
- Shipley, T.F., & Tikoff, B., (2019, August). Collaboration, Cyberinfrastructure, and Cognitive Science: The role of databases and dataguides in 21st century Structural Geology. *Journal of Structural Geology*. 125 (August), 48-54. <https://doi.org/10.1016/j.jsg.2018.05.007>
- Wilson, C. G., Bond, C. E., and Shipley, T. F., (2019, September) How can geologic decision-making under uncertainty be improved?, *Solid Earth*, 10, 1469–1488, <https://doi.org/10.5194/se-10-1469-2019>, 2019.
- Nazareth, A., Newcombe, N., Shipley, T.F., Velazquez, M., & Weisberg, S., (2019, December), Beyond Wayfinding: Navigation Skills and Geoscience Education. *Cognitive Research: Principles and Implications*, 4 (4), 1-17. <https://rdcu.be/bGFuw>
- Harold, J., Lorenzoni, I., Shipley, T.F., Coventry, K., (2020, January; December on line). Communication of IPCC visuals: IPCC authors' views and assessments of visual complexity. *Climatic Change*. 158(2), 255-270. <https://doi.org/10.1007/s10584-019-02537-z>
- Jaeger, A., Marzano, J., & Shipley, T.F., (2020, July/August). When seeing what's wrong makes you right: The effect of erroneous examples on 3D diagram learning, *Applied Cognitive Psychology (Special issue on Example-based learning)*, 844-861. DOI: 10.1002/acp.3671
- Wilson, C.G., Davatzes, A., Shipley, T.F. (2020, September/October). Evidence of vulnerability to decision bias in expert field scientists. *Applied Cognitive Psychology*, 34(5), 1217-1223.
- Lombardi, D., Shipley, T. F., Astronomy Team (Bailey, J. M, Bretones, P. S., Prather, E. E.), Biology Team (Ballen, C. J., Knight, J. K., Smith, M. K.), Chemistry Team (Stowe, R. L., Cooper, M. M.), Engineering Team (Prince, M.), Geography Team (Atit, K., Uttal, D. H.), Geoscience Team (LaDue, N. D., McNeal, P. M., Ryker, K., St. John, K., van der Hoeven Kraft, K. J.), & Physics Team (Docktor, J. L.) (2021, April). The curious construct of

active learning. *Psychological Science in the Public Interest*, 22(1), 8-43. <https://doi.org/10.1177/1529100620973974>

LaDue, N.D., Ackerman, J., Blaum, D., Shipley, T.F., (on line February 27, 2021). Assessing Water Literacy: Undergraduate student conceptions of groundwater and surface water flow. *Water*, **13**, 622;18 pages.

Wilson, C.G., Qian, F., Jerolmack, D.J., Roberts, S. Ham, J., Koditschek, D., Shipley, T.F., (on line only April 9, 2021). Spatially and temporally distributed data foraging decisions in disciplinary field science. *Cognitive Research: Principles & Implications*, **6**, 29; 16 pages. <https://doi.org/10.1186/s41235-021-00296-z>

Lanini-Maggi, S., Ruginski, I.T., Shipley, T.F., Hurter, C., Duchowski, A.T., Briesemeister, B.B., Lee, J., Fabrikant, S.I., (2021, on line only July 29, 2021) Assessing how visual search entropy and engagement predict performance in a multiple-objects tracking air traffic control task, *Computers in Human Behavior Reports*, volume 4 (Aug-Dec 2021), 100127, ISSN 2451-9588, <https://doi.org/10.1016/j.chbr.2021.100127>.

Bateman, K.M, Altermatt, E., Egger, A., Iverson, E., Manduca, C., Riggs, E., St. James, K. and Shipley, T.F. (2022; in print February). Learning from the COVID-19 Pandemic: How Faculty Experiences Can Prepare Us for Future System-Wide Disruption. *GSA Today*. 32(2), 36-37

Kreager, B.Z., LaDue, N.D., Shipley, T.F., Powell, R.D., Hampton, B.A., (2022, on line February 25, 2022; print April). Spatial skill predicts success on sequence stratigraphic interpretation. *Geosphere*; *Geosphere*, **18** (2), 750-761. doi: <https://doi.org/10.1130/GES02428.1>

Ulichney, V., Jarcho, J. M., Shipley, T. J., Ham, J., & Helion, C., et al. (2022; on line March 2022, print August 2022) Social comparison for concern and action on climate change, racial injustice, and COVID-19. *Analyses of Social Issues and Public Policy*, 22, 469– 489. <https://doi.org/10.1111/asap.12309>

Bateman, K.M., Ham, J., Barshi, N., Tikoff, B., and Shipley, T. (2022, published on line May 6, 2022; print January, 2023) Scaffolding Geology Content and Spatial Skills with Playdough Modeling in the Field and Classroom. *Journal of Geoscience Education*. 71,1, 43-57. , DOI: 10.1080/10899995.2022.2071082 (selected by journal to be the free access paper for August, 2022)

Bateman, K.M., Wilson, C.G., Williams, R., Tikoff, B., and Shipley, T.F. (December 2022; published on line May 11). Explicit instruction of scientific uncertainty in an undergraduate geoscience field-based course. *Science & Education*, 31, 1541–1566. <https://doi.org/10.1007/s11191-022-00345-z>

Bateman, K.M., Williams, R.T., Shipley, T.F., Tikoff, B., Pavlis, T., Wilson, C.G., Cooke, M.L., Fagereng, A. (November 2022 on line only), Strategies for effective unmanned aerial

vehicle use in geological field studies based on cognitive science principles. *Geosphere* 2022;; 18 (6): 1958–1973. doi: <https://doi.org/10.1130/GES02440.1>

Karjack, S., Brudzinski, M., Shipley, T.F., (2022, July 15 on line and date of record). Assessment of the General Public's Understanding of Rapidly Produced Earthquake Information Products ShakeMap and PAGER. *Seismological Research Letters*. 93 (5): 2891–2905.

Tikoff, B., Housen, B., Maxson, J., Nelson, E., Trevino, S., & Shipley, T.F. (January 2023). The hit-and-run model for Cretaceous-Paleogene tectonism along the western margin of Laurentia. *Laurentia: An Evolving Continent*, Geological Society of America Books.

Tikoff, B., Shipley, T.F., Nelson, E.M., Williams, R.T., Barshi, N., and Wilson, C. (July, 2023). Improving the practice of geology through explicit inclusion of scientific uncertainty for data and models. *GSA Today*. 33(7), 4-9.

Kreager, B. Z. LaDue, N. D. & Shipley, T. F. (September 2023; on line January 2023;) Conceptual understanding of sequence stratigraphy, *Journal of Geoscience Education*, 71:4, 507-524, DOI: 10.1080/10899995.2023.2165866

Nelson, EM, Tikoff, B, Shipley, TF, Lusk, AD, Wilson, C., (2023). Evaluation of Observationally Based Models Through Salience and Salience Maps, *The Journal of Geology*. 131 (4) 313 – 324

Resnick, I., Chapman, E.L. & Shipley, T.F. (February 2024, on line November 2023). Which Way Does Time Go? Differences in Expert and Novice Representations of Temporal Information at Extreme Scales Interferes with Novice Understanding of Graphs. *Journal of Science Education and Technology*, 33, 131–142. <https://doi.org/10.1007/s10956-023-10079-4>

Kastens, K.A., & Shipley, T.F. (2023, on line only December 2023; reviewed conference proceedings) How does the human mind think and learn about feedback loops? *Proceedings of the International Systems Dynamics Conference*, <https://proceedings.systemdynamics.org/2023/papers/P1208.pdf>.

Ruck, J. G., Wilson, C. G., Shipley, T., Koditschek, D., Qian, F., & Jerolmack, D. (2024, January on line only). Downslope weakening of soil revealed by a rapid robotic rheometer. *Geophysical Research Letters*, 51, e2023GL106468. <https://doi.org/10.1029/2023GL106468>

Brudzinski M. R., Shipley, T. S., Ham, J. (2025, April; on line April 2024) An Evaluation of Spatial Visualization Strategies for Improving Student Understanding of the Elastic Rebound Theory of Earthquakes, *Journal of Geoscience Education*, 73(2), 154–171. <https://doi.org/10.1080/10899995.2024.2335844>.

Bennett-Pierre, G., Shipley, T.F., Newcombe, N.S. Gunderson, E., (2025 on line only March 26, 2025). Developing a novel measure of non-rigid, ductile spatial skill. *Cognitive*

Research: Principles & Implications **10** (13), 39 pages. <https://doi.org/10.1186/s41235-025-00621-w>. .

Liang, S., Manjanna, S., Shipley, T.F., Hsieh, M. Ani, (2025, August). A Human-In-The-Loop Metaheuristic Approach to Multiobjective Path Planning. Reviewed conference paper: 2025 34th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN).

Bateman, K. M., Conrath, B., Ham, J., Egger, A., St. John, K., & Shipley, T. (2025, July on line Aug 2024). Managing disruptions and dilemmas in online geoscience instruction during the early 2020 COVID-19 pandemic. *Journal of Geoscience Education*, 73 (3), 276-289. <https://doi.org/10.1080/10899995.2024.2388014>

Tikoff, B., Nelson, E.M., Gordon, S.M., and Shipley, T.F., (in press), Using salience to compare different tectonic models for western North America, *in* Gordon, S.M., Miller, R.B., Rusmore, M., and Tikoff, B., eds., Jurassic–Paleogene tectonic evolution of the North American Cordillera: Geological Society of America Special Paper.

Shipley, TF, Tikoff, B, Nelson, EM, Wilson, C., (in press). The role of communication theory in supporting observationally based sciences; or, What happens when psychologists visit a field station?.. White Mountain Research Center special research volume, 1-3.

Wilson, C.G., Sadler, M., Sheckler, C., Lader, J., Shipley, T.F., (2025). Recording and communicating uncertainty in science: how geologists manage variability in spatial data. *Cognitive Research: Principles and Implications*.

GSA Today Series: Places that Reveal the Geological Mind (Sept, 2024 - Sept, 2025):

These essays together form an intellectual project that combines geology and psychology to reveal important aspects of how scientists think and guides practice. The papers are the results of a writing project that began in 2017. By 2023 we had enough drafts written to commit to publishing one a month for a year and began the review process. My co-author is a geologist and we agreed to alternate authorship. I drafted original text, and reviewed and edited multiple drafts of all papers.

Shipley, T.F., & Tikoff, B., (Sept, 2024). Introduction to the Series. *GSA Today*. 34(9), 22-24.

Shipley, T.F., & Tikoff, B., (Sept, 2024). Lake Bonneville shorelines, Utah, and the role of the mind in the practice of geology. *GSA Today*. 34(9), 26-29.

Tikoff, B., & Shipley, T.F., (Oct, 2024). Shark Bay, Australia, and the Centrality of Analogical Thinking. *GSA Today*. 34(10), 26-29.

Shipley, T.F., and Tikoff, B., (Nov, 2024). Siccar Point, Scotland, and the role of mental models: *GSA Today*, 34(11), 36–40.

Tikoff, B., and Shipley, T.F., (Dec, 2024), Henry Mountains, Utah: The construction of mental models and the role of geological exemplars: *GSA Today*, 34(12), 22–25, <https://doi.org/10.1130/GSATG104GM.1>.

Shipley, T.F., and Tikoff, B., (Jan, 2025). Channeled Scablands, northwest U.S., and runnable mental models: *GSA Today*, 35(1), 26–30, <https://doi.org/10.1130/GSATG105GM.1>.

Tikoff, B., and Shipley, T.F., (Feb, 2025). Grand Canyon, USA: Lumping and Splitting to Make Sense of a (Somewhat) Predictable World, *GSA Today*, 35(2), 4–8, <https://doi.org/10.1130/GSATG106GM.1>

Shipley, T.F., and Tikoff, B., (March/April, 2025). Mauna Loa, Hawai‘i, and Human Perception, *GSA Today*, 35(3), 28–34, <https://doi.org/10.1130/GSATG107GM.1>

Tikoff, B., and Shipley, T.F., (May, 2025). Mount Stuart, Washington State: Beware Occam’s razor: *GSA Today*, 35 (5), p. 4–9, <https://doi.org/10.1130/GSATG108GM.1>.

Shipley, T.F., and Tikoff, B., (June, 2025). Walcott Quarry, British Columbia, Canada: Spatial thinking: *GSA Today*, 35 (6), p. 4–9, <https://doi.org/10.1130/GSATG109GM.1>.

Shipley, T.F., Tikoff, B., and Nelson, E.M., (July, 2025), Sage Hen Flat pluton, California, and increasing trust by communicating uncertainty and salience: *GSA Today*, v. 35, no. 7, p. 36–42, <https://doi.org/10.1130/GSATG110GM.1>.

Manuscripts Under Review:

Tansan, M., Shipley, T.F., Newcombe, N., (under review). A Study of Integrating Spatial Relationships Across Separately Learned Routes: Navigating Segmented Paths in Copetown. *Neuropsychologia*.

Invited Research Colloquia:

Rutgers University, Department of Psychology, April, 1989.

The University of Georgia, Department of Psychology, February, 1991.

Georgetown University, Department of Psychology, February, 1991.

The Georgia Institute for Technology, Cognitive Sciences Colloquia Series, October, 1991.

University of Georgia, Athens, Institute for Behavioral Research, February, 1992.

Temple University, Department of Psychology, January, 1993.

Emory University, Emory Cognition Project Seminar, February, 1993.

Temple University, Cognitive Neuroscience Series, February, 1994.

New York University, Center for Neural Science, March, 1995.

University of Pennsylvania, Festschrift for Henry & Lila Gleitman, June, 1996.

NEC Research Institute, October, 1997.

University of Trieste, Italy, Symposium on Perception and Cognition, October, 1997.

Rutgers University, Department of Psychology, December, 2000.

University of Delaware, Department of Psychology, February, 2001.

University of Arizona, Cognitive Science Series, April, 2001.

University of Glasgow, Canada, Roundtable on human motion, November 2003.

University of Glasgow, Scotland, Department of Psychology, October 2004.
 University of the Mediterranean, France, Department of Sports Sciences, November 2004.
 Washington University, Saint Louis, Cognitive Neuroscience of Film Workshop, April 2005.
 University of Bremen, Germany, Spatial Cognition Group, September 2007.
 Cognitive Systems for Cognitive Assistants Workshop, France, September 2007.
 University of Poitiers, France, Department of Psychology, September 2007.
 Temple University, Department of Geology, April, 2011.
 Penn State Geography Coffee Hour, February, 2012.
 Education Development Corporation, January, 2014.
 University of East Anglia, UK, Climate Change and Psychology Workshop, March, 2014.
 Swiss Federal Institute of Technology (ETH –Zurich), Switzerland, May 2014
 Center of Philosophy of Science, Diagrams as Vehicle for Scientific Reasoning workshop, Pittsburg, April 2015
 Northern Illinois University Department of Geology and Environmental Geosciences, December, 2016.
 Convergence of Materials Research and Multi-Sensory Data Science, June, 2018.
 Lehigh University, Psychology, Education, and Earth and Environment departments, January, 2019.
 Harvard University, Graduate School of Design, Landscape Architecture, February, 2019.
 Western Michigan University, Department of Geological and Environmental Sciences, October, 2020.
 Temple University, Department of Earth & Environmental Science, August, 2025.

University of Georgia Committees and Activities:

Cognitive Initiative Committee, 1991-1993.
 Cognitive Sciences Steering Committee

Temple University Committees and Activities:

Psychology Dept. Library Committee, 1993-95.
 Psychology Dept. Grievance Committee, 1993-97.
 Psychology Dept. Colloquia Committee, 1993-97, Chair 2006-2007.
 Psychology Dept. Computer Committee, 1995-2001.
 Psychology Dept. fMRI acquisition Committee, 2003.
 Psychology Dept. Senior Cognitive Psychologist Search Committee, 2003.
 Psychology Dept. Undergraduate Education Committee, 2007-2008, Chair 2008-2010.
 College of Liberal Arts. Research Council, 2008-2012.
 Temple University Honors oversight committee, 2011-2015.
 Temple University Provost's Academic Program Advisory Committee, 2016-17
 Psychology Dept. Outreach and Development Committee, Chair 2016-2017.
 College of Liberal Arts Promotion committee, member, 2019-2021, 2023.

Teaching Experience:

Instructor, summer session at the University of Pennsylvania, 1986 & 1987, Animal Learning, Sensation and Perception.

Guest Lecturer, Swarthmore College, 1988 - 1991, Introductory Psychology, Perception, Honors Perception Seminar.

Assistant Professor, University of Georgia, 1991-1993, Laboratory in Sensation and Perception, Learning, Advanced General Psychology, Special Problems, Directed Readings in Psychology, Perception Seminar, Developmental Perception Seminar.

Assistant Professor, Temple University, 1993 - 1999.

Associate Professor, Temple University, 1999 – 2018

Professor, Temple University, 2018 – present. Psychology as a Natural Science, Sensation and Perception, Introductory level Psychology of Food, Psychology Capstone on food, Graduate Core Sensation and Perception Seminar, Undergraduate Topical Seminars in: Animal Cognition, Art and Perception, Object and Event Perception, Perception and Cognition in Everyday Life, Psychology of Food, Psychology and the Internet.

PhD Students:

Douglas W. Cunningham, Temple University, 1997. Thesis title: “The influence of static shape information on spatiotemporal boundary formation.”

Leslie R. Cohen, Temple University, 2001. Thesis title: “The role of experience in the perception of biological motion.”

Megan Meyer, Temple University, 2004, Thesis title: “The perception of non-linear apparent motion paths in displays with obstacles: Evidence for a general solidity constraint and object specific motions.”

Mark Holden, Temple University 2011, Thesis title: “Extending the category adjustment model: Location memory biases in 3-dimensional space.”

Ilyse Resnick, Temple University 2013, Thesis title: “The role of linear representation of large magnitudes on understanding and estimation.”

Kinnari Atit, Temple University, 2014 Thesis title: “Pattern identification or 3D visualization? How best to learn topographic map comprehension.”

Jordan Harold, University of East Anglia (co-supervised with Kenny Coventry and Irene Lorenzoni). 2018.

Rachel Myer, Temple University, 2022, Thesis title: “Adult Perception and Conceptions of Single and Two Force Interactions.”

Rebekah Banerjee, Temple University, 2024. “Examining feedback loop thinking as a mental model: development and analysis of a new measure.”

Professional Affiliations (past and present):

The Psychonomic Society

American Psychological Association

American Psychological Society
 Vision Sciences Society
 American Geological Society
 American Association of Geographers

Other Professional Activities:

Organized symposium on Event Representations for 2005 Psychonomics conference
 Organized International Workshop on Spatial Cognition in Freiburg Germany, 2008
 The workshop brought together 20 eminent US research with 20 European Union researchers. The results were presented to representatives of the National Science Foundation and the German Research Funding Council (DFG). Follow up workshop held in New York 2009; third follow up to be held in New York 2011.
 Co-Chair of the organizing committee for Spatial Cognition 2010 (held in August in Portland, USA)
 Co-Chair of the organizing committee for Cognitive Science 2011 (The theme of the conference was *Expanding the space of Cognitive Science* held in July in Boston, USA)
 Co-Organizer of the 2013 Hedberg Conference (sponsored by the American Association of Petroleum Geologists) on *3D Structural Geologic Interpretation: Earth, Mind, and Machine*. Reno NV USA
 Chair of the tutorials committee for Spatial Cognition 2008 (held in Freiburg, Germany)
 Co-chair 2023 Gordon Research Conference on Visualization (vice-chair for 2021 conference).
 Host site co-chair 2024 Earth Educators Rendevous.
 Organized session, with C. Manduca, C. Ormand, and B. Tikoff on Spatial Skills in the Geosciences for 2009 Geological Society of America meeting (Portland, OR)
 Co-Organized 2010 AAAI Spring Symposium “Cognitive Shape Processing.” With Thomas Barkowsky, Christoph Hoelscher, and Sven Bertel. (Stanford, CA, USA)
 Co-Organizer symposium on *Spatial Thinking Across the College Curriculum* as part of the American Association of Geographers 2013 meeting, Los Angeles, CA USA.
 Co-convener of the Temporal Learning Journal Club, which is part of the *On the Cutting Edge* faculty professional development program (NSF funded, NAGT sponsored), January-May, 2011
 Organized session, with Steve Semkin and Carol Ormand. Time, Events, and Places: Understanding Temporal and Spatial Learning in Geoscience Education. 2011 Geological Society of America Annual Meeting, Minneapolis, MN.
 Co-teacher of short course, Strengthening Students' Spatial Thinking Skills. With Carol Ormand, SERC, Carleton College & Nicole LaDue, Northern Illinois University. 2018 Geological Society of America Annual Meeting, Indianapolis, IN.
 Member of the scientific review committee International Conference on Spatial Cognition 2009 and 2012 (held in Rome, Italy)
 Published Biological Motion Point-light Action Archive:
<http://astro.temple.edu/~tshipley/mocap.html>
 Contributed to an Optical Illusions exhibit for the Bloomfield Science Museum, Jerusalem.
 Contributed to an Biological Motion exhibit for Turmdersinne [Tower of the senses],

Nuremberg Germany – an interactive museum on perception and illusion.
 Review Editorial Board member of *Frontiers in Perception Science*, 2010- present
 Consulting Editor for *Perception & Psychophysics*. 1995-2010
 Consulting Editor for *Journal of Experimental Psychology: General*. 1998-2001
 Associate Editor for *Cognitive Processing*. 2011-2014
 Reviewer of General Perception entries for the American Psychological Association's
Dictionary of Psychology (2005 and 2011)
 Chaired the American Psychological Association's Early Career Award Panel in
 Perception, Motor Performance (2006)
 Peer review panel member for National Aeronautics and Space Administration's
 Multiple Opportunities for Ground-Based Research in Space Life Sciences, served
 2002-2005.
 Peer review panel member for National Science Foundation's Information Technology
 Research Program, Medium Project-Vision, served May 2003.
 Ad hoc Grant reviewer for the National Science Foundation, Rockefeller Foundation,
 Jeffress Trust, EPFL Interdisciplinary Seed Fund 2019, and Social Sciences and
 Humanities Research Council of Canada.
 External Examiner for Swarthmore College's Honors program: 1995 - Perception and
 Cognition, 1997 – Cognition, 2003 – Thesis and Cognition, 2008 & 2011 -
 Cognition.
 Masters Committee member for Elaine Guidero, Penn State University, 2011
 PhD co-supervisor Jordan Harold, University of East Anglia, 2014
 Careers in Science panel, Swarthmore College, June 2011.
 Reviewer for *Acta Psychologica*, *Applied Cognitive Psychology*, *Behavioral and Brain
 Sciences*, *Child Development*, *Cognition & Instruction*, *Cognitive Psychology*,
Computers & Geosciences, *European Journal of Neuroscience*, *Geosciences*,
Infancy, *International Journal of Humanoid Robotics*, *Journal of Experimental
 Psychology: Human Perception and Performance*, *Journal of Experimental
 Psychology: General*, *Journal of Geography*, *Journal of Vision*, *Perception*,
Perception & Psychophysics, *Perceptual and Motor Skills*; *Psychological Bulletin*,
Psychological Review, *Psychological Science*, *Psychonomic Bulletin & Review*,
Spatial Cognition and Computation: An Interdisciplinary Journal, *Vision
 Research*, and *Visual Cognition*.