

V.N. Vimal Rao

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POSITIONS

University of Illinois Urbana-Champaign

Department of Statistics, Champaign, IL
Teaching Assistant Professor

2023 – present

University of Minnesota Twin-Cities

Department of Educational Psychology, Minneapolis, MN
Graduate Instructor

2019 – 2022

George Washington University

Department of Clinical Research and Leadership, Washington, DC
Adjunct Instructor / Adjunct Assistant Professor

2016 – 2024

Health Resources and Services Administration

Division of Policy and Data, HIV/AIDS Bureau, Rockville, MD
Chief (GS-1530-14), Data Management and Analysis Branch
Health Statistician (GS-1530-13), Data Management Branch

2015 – 2016
2014 – 2015

US Census Bureau

Decennial Statistical Studies Division, Suitland, MD
Mathematical Statistician (GS-1529-9/11/12), Quality Assurance Branch
National Processing Center, Jeffersonville, IN
Mathematical Statistician (GS-1529-7/9/11), Statistical Methods Section

2010 – 2014
2009 – 2010

EDUCATION

PhD Educational Psychology, University of Minnesota

2023

Quantitative Methods in Education, Statistics Education

Advisors: Robert delMas and Andrew Zieffler

Committee Members: Panayiota Kendeou and Erin Baldinger

MA Educational Psychology, University of Minnesota

2023

Psychological Foundations of Education, Learning and Cognition

Advisors: Jeffrey K. Bye and David DeLiema

MS Statistics, George Washington University

2013

BS Mathematics and Economics, University of Illinois

2008

Pure Mathematics

GRANTS AWARDED

4. Title: Harnessing GPT Technologies to Develop Students' Statistical and Computational Thinking
Agency: University of Illinois Center for Social and Behavioral Sciences
Program: Small Grant Program
Role: Principal Investigator
Award: \$29,450
Project Period: 2024 – 2026

3. Title: Building a Modern Assessment for Statistical Literacy
Agency: University of Illinois Office of the Provost
Program: Provost's Initiative on Teaching Advancement
Role: Co-Principal Investigator
Award: \$7,500
Project Period: 2024 – 2025

2. Title: An Authentic Introduction to Data and Statistics
Agency: University of Illinois University Library
Program: Open Educational Resources Incentive Program
Role: Project Director
Award: \$6,000
Project Period: 2024 – 2026

1. Title: Developing Gender Inclusive Activities for Quantitative Methods Courses
Agency: Association for Psychological Science
Program: Fund for Teaching and Public Understanding of Psychological Science
Role: Project Director
Award: \$5,000
Project Period: 2023 – 2024

GRANTS SUBMITTED

2. Title: Developing a student-centered formative assessment framework for authentic visual data literacy
Agency: The Spencer Foundation
Program: Research Grants on Education: Small
Role: Principal Investigator
Requested Total Budget: \$49,883
Project Period: 2026 – 2028

1. Title: Learning Statistics – The Neuroscience of Desirable Difficulties
Agency: National Science Foundation
Program: Small Grant Program
Role: Senior Personnel
Requested Total Budget: \$1,499,820
Project Period: 2025 – 2029

PEER-REVIEWED PUBLICATIONS (‡FORMER STUDENT OR MENTEE)

16. **Rao, V.N.V.**, Jeng, A.‡, Drew, J.‡, Kala, B.‡, & Gongati, S.‡ (2026). Students' statistical thinking when using generative AI: A descriptive case study. *Journal of Statistics and Data Science Education*. <https://doi.org/10.1080/26939169.2025.2596684>
15. **Rao, V.N.V.**, & Bye, J.K. (2025). A “ $p < .05$ ” boundary effect in the encoding and retrieval of p -values from scientific texts. In D. Barner, C. Walker, A. Ruggeri, & N. Bramley (Eds.), *Proceedings of the 47th Annual Conference of the Cognitive Science Society* (pp. 6154-6161). <https://escholarship.org/uc/item/08x7m34h>
14. Marupudi, V., Varma, S., & **Rao, V.N.V.** (2025). Perceived clusters may not explain people's judgments of approximate numerosity. In D. Barner, C. Walker, A. Ruggeri, & N. Bramley (Eds.), *Proceedings of the 47th Annual Conference of the Cognitive Science Society* (pp. 3011-3018). <https://escholarship.org/uc/item/79s8k1p8>
13. Legacy, C., Zieffler, A., **Rao, V.N.V.**, & delMas, R. (2025). Vampires and star-crossed lovers: Secondary teachers' reasoning about the connections between multivariate data and visualization. *Statistics Education Research Journal*, 24(1). <https://doi.org/10.52041/serj.v24i1.613>
12. Simpson, M.‡, & **Rao, V.N.V.** (2024). Association between generational trauma and progressive dementia types. *Minnesota Undergraduate Research & Academic Journal*, 6(1). Available at <http://z.umn.edu/MURAJ>
11. **Rao, V.N.V.**, Bye, J.K., & Varma, S (2024). The psychological reality of the learned “ $p < 0.05$ ” barrier. *Cognitive Research: Principles and Implications*, 9, 27. <https://doi.org/10.1186/s41235-024-00553-x>
10. Ancel, E.E.‡, Smith, M.L.‡, **Rao, V.N.V.**, & Munson, B. (2023). Relating Automated Acoustic Measures and Listener Ratings of Children's Productions of Word-Initial /ɪ/ and /w/. *Journal of Speech, Language, and Hearing Research*, 66(9), 3413-3427. https://doi.org/10.1044/2023_JSLHR-22-00713
9. **Rao, V.N.V.**, Mader, J.‡, & Friedlander, E. (2023). A framework for the design of gender inclusive activities. In E.M. Jones (Ed.), *Fostering Learning of Statistics and Data Science: Proceedings of the Satellite Conference of the International Association for Statistical Education*. Available at https://iase-web.org/Webinars.php?p=230711_2000.
8. Running, K., Codding, R.S., Varma, S., **Rao, V.N.V.**, & Wackerle-Hollman, A. (2023). Comparing the Effects of Concepts-First and Iterative Fraction Instruction Sequences: A Randomized Control Trial. *The Elementary School Journal*, 124(1), 85-108. <https://doi.org/10.1086/725730>
7. **Rao, V.N.V.**, Legacy, C., Zieffler, A., & delMas, R. (2023). Designing a sequence of activities to build reasoning about data and visualization. *Teaching Statistics*, 45(S1), S80-S92. <http://doi.org/10.1111/test.12341>

6. DeLiema, D., Hufnagle, A.S., **Rao, V.N.V.**, Baker, J., Valerie, J., & Kim, J. (2023). Methodological considerations and innovations at the intersection of video-based research traditions. *International Journal of Research and Method in Education*, 46(1), 19-36. <https://doi.org/10.1080/1743727X.2021.2011196>
5. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022). Graduate students' effect size categorical boundaries. In S.A. Peters, L. Zapata-Cardona, F. Bonafini, & A. Fan (Eds.), *Proceedings of the 11th International Conference on Teaching Statistics* (pp. 1-6). <https://doi.org/10.52041/iase.icots11.T3C2>.
4. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022). Categorical perception of *p*-values. *Topics in Cognitive Science*, 14(2), 414-425. <https://doi.org/10.1111/tops.12589>
3. Marupudi, V., Harsch, R.M., Park, J., Bye, J.K., **Rao, V.N.V.**, & Varma, S. (2022). Use of clustering in human solutions of the traveling salesperson problem. In J. Culbertson, A. Perfors, H. Rabagliati, & V. Ramenzoni (Eds.), *Proceedings of the 44th Annual Conference of the Cognitive Science Society* (pp. 424-430). <https://escholarship.org/uc/item/3t16j57m>.
2. Marupudi, V., Harsch, R.M., **Rao, V.N.V.**, Bye, J.K., Park, J., & Varma, S. (2021). The role of clustering in the efficient solution of small Traveling Salesperson Problems. In T. Fitch, C. Lamm, H. Leder, & K. Tessmar (Eds.), *Proceedings of the 43rd Annual Conference of the Cognitive Science Society* (pp. 1865-1871). <https://escholarship.org/uc/item/5q76r06x>.
1. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021). Categorical perception of *p*-values. In T. Fitch, C. Lamm, H. Leder, & K. Tessmar (Eds.), *Proceedings of the 43rd Annual Conference of the Cognitive Science Society* (pp. 168-173). <https://escholarship.org/uc/item/7hw3s1rs>.

INVITED TALKS

10. **Rao, V.N.V.** (2025, September). *Developing the Field of Statistical Cognition — Creating New Methods and Deriving New Theories* [Invited Talk]. Quantitative and Qualitative Methodology, Measurement and Evaluation (QUERIES) Division Seminar, Educational Psychology Department, University of Illinois, Urbana, Illinois, USA. Sponsored by Dr. Justin Kern.
9. **Rao, V.N.V.** (2025, May). *Teaching Authentic Data Visualization Literacy* [Invited Talk]. Statistics and Data Science Teacher Education Community Circle, Association of Mathematics Teacher Educators. Sponsored by Dr. Travis Weiland.
8. **Rao, V.N.V.** (2025, March). *On the Psychology of Statistical Practice* [Invited Talk]. Quantitative Psychology Division Seminar, Psychology Department, University of Illinois, Urbana, Illinois, USA. Sponsored by Dr. Victor Cervantes.
7. **Rao, V.N.V.** (2024, November). *On the Cognition of *p*-values* [Invited Talk]. Cognitive Science of Teaching & Learning Division Seminar, Educational Psychology Department, University of Illinois, Urbana, Illinois, USA. Sponsored by Dr. Cynthia D'Angelo.

6. Le, L., Jiroutek, M., **Rao, V.N.V.**, & Foti, S. (2024, January). *Biostatistical Literacy: What is it, and how can we teach it?* [Invited Seminar]. Royal Statistical Society Teaching Section, online. Sponsored by Dr. Elinor Jones.
5. **Rao, V.N.V.** (2023, October). *Intro Stats in a GPT World* [Invited Talk]. Mathematics Learning Research Group, Michigan State University, East Lansing, Michigan, USA. Sponsored by Dr. Jenny Green.
4. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, September). *The Psychology of Statistics* [Invited Talk]. Stochastic Modeling and Computational Statistics, Pennsylvania State University, State College, Pennsylvania, USA. Sponsored by Dr. Matthew Beckman and Dr. Stephen Berg.
3. **Rao, V.N.V.** (2022, May). *Thinking about thinking: A preliminary analysis of the use of eye tracking in the study of statistical thinking* [Invited Talk]. Teaching and Learning Lab, University of California Los Angeles, Los Angeles, California, USA. Sponsored by Dr. Jim Stigler and Dr. Karen Givvin.
2. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, October). *Statistical Significance and the Categorization of p-values* [Invited Talk]. Percepts and Concepts Lab, Indiana University, Bloomington, Indiana, USA. Sponsored by Dr. Robert Goldstone.
1. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, October). *Statistical Significance and the Categorization of p-values* [Invited Talk]. Psychological Foundations of Education Research Talks, University of Minnesota, Minneapolis, Minnesota, USA. Sponsored by Dr. Martin Van Boekel.

CONFERENCE TALKS AND PRESENTATIONS ([‡]FORMER STUDENT OR MENTEE)

20. **Rao, V.N.V.** (2025, June). *On the cognitive science of statistical measures* [Presentation]. Annual Meeting of the Canadian Psychological Association (CPA), St. John's, Newfoundland, Canada. (cancelled)
19. May, N. [‡], & **Rao, V.N.V.** (2024, November). *Cooperative learning in an online asynchronous statistics course: Instructor and student perspectives* [Presentation]. Towards Online Excellence: Illinois Online Higher Education Symposium, online.
18. **Rao, V.N.V.**, Mader, J. [‡], & Friedlander, E. (2023, July). *A framework for the design of gender inclusive activities* [Paper Presentation]. 13th Annual Satellite Conference of the International Association for Statistical Education (IASE), Toronto, Ontario, Canada.
17. May, N. [‡], & **Rao, V.N.V.** (2023, June). *Cooperative learning in an online asynchronous statistics course: Instructor and student perspectives* [Presentation]. 5th Annual University of Minnesota Academic Technology SHAREcase, Minneapolis, Minnesota, USA.
16. **Rao, V.N.V.**, Mader, J. [‡], & Friedlander, E. (2023, June). *Gender Inclusivity from the Perspective of Non-Cisgender Students* [Lightning Talk]. Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Research Satellite, State College, Pennsylvania, USA.

15. Foti, S. J., Jiroutek, M. R., Le, L., & **Rao, V.N.V.** (2023, June). *Biostatistical Literacy: What is it, and how can we teach it?* [Breakout Session]. United States Conference on Teaching Statistics (USCOTS), State College, Pennsylvania, USA.
 14. Chen, B., Bartucz, J., Scharber, C., **Rao, V.N.V.**, & DeLiema, D. (2023, April). *Towards a framework for justice-oriented data science education in K-12 schools* [Paper Presentation]. Annual Meeting of the American Educational Research Association (AERA), Chicago, Illinois, USA.
 13. **Rao, V.N.V.** & Carpenter, Z. (2022, October). *Openness and Uncertainty: A forum on the psychology of science* [Forum]. Seventh Annual Learning Sciences Graduate Student Conference (LSGSC), Bloomington, Indiana, USA.
 12. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, September). *Graduate students' effect size categorical boundaries* [Paper Presentation]. The Eleventh International Conference on Teaching Statistics (ICOTS-11), Rosario, Argentina.
 11. Marupudi, V., Harsch, R.M., Park, J., Bye, J.K., **Rao, V.N.V.**, & Varma, S. (2022, July). *Use of clustering in human solutions of the traveling salesperson problem* [Paper Presentation]. Annual Meeting of the Cognitive Science Society, Toronto, Canada.
 10. **Rao, V.N.V.**, Bailey, N., Bartucz, J., & Chávez, C. (2022, May). *Social Justice is more than just using critical contexts: A panel on embedding social justice into curricula* [Breakout Session]. Electronic Conference on Teaching Statistics (eCOTS), online.
 9. Legacy, C., Zieffler, A., delMas, R., & **Rao, V.N.V.** (2022, January). *Data to graphs and back: Secondary teachers' reasoning about the aesthetic mappings that link data and visualizations* [Paper Presentation]. 12th International Research Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-12), online.
 8. Torrey-White, K.[‡], Gary, L., Bergson, A., Flynn, J., Driehorst, M., Siekman, R., Prekker, F., Slusher, T., Maynard, K., Paetox, G., **Rao, V.N.V.**, Hendrickx, L., & Bjorklund, A. (2021, November). *A Quality Improvement Project Using Simulation to Improve Nursing Confidence and Skills and Promote Teamwork During High Acuity, Low Occurrence Clinical Events in the Pediatric Intensive Care Unit* [Quick Shot Presentation]. Annual Meeting of the Pediatric Trauma Society, Baltimore, Maryland, USA.
 7. Society for the Teaching of Psychology's Presidential Task Force on Statistical Literacy, Reasoning, and Thinking*. (2021, August). *STP's Statistical Literacy, Reasoning, and Thinking Presidential Task Force's recommendations and resources for integrating psychological statistics across the undergraduate curriculum* [Symposium]. Annual Meeting of the American Psychological Association (APA), San Diego, California, USA.
- *16 scholars (chairs, followed by alphabetical order): Hartnett, J. (chair), Freeman, E. (co-chair), Neufeld, G. (co-chair), Aguilera, S.E., Geodert, K., Karazsia, B., Naufel, K., Peters, J., **Rao, V.N.V.**, Reusser, A.Y., Sathy, V., Shaw, R., Soicher, R., Smith, T., Ullman, J., & Woodward, A.

6. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, July). *More than just a name: The psychological effects of 'Statistical Significance'* [Oral presentation]. The 36th Annual Psychology Postgraduate Affairs Group Conference (PsyPAG), online.
5. The Link Tank* (2021, July). *The promise of video-based research methods in psychology* [Oral presentation]. The 36th Annual Psychology Postgraduate Affairs Group (PsyPAG) Conference, online.
*6 scholars (alphabetical order): Baker, J., DeLiema, D., Hufnagle, A., Kim, J., **Rao, V.N.V.**, & Valerie, J.
4. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, July). *Categorical perception of p-values* [Paper presentation]. Annual Meeting of the Cognitive Science Society, Vienna, Austria.
3. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, April). *The psychological reality of the learned "p < 0.05" barrier* [Paper presentation]. Annual Meeting of the American Educational Research Association (AERA), online.
2. **Rao, V.N.V.** (2020, November). *A Null Hypothesis Story* [Lightning Talk]. Fifth Annual Learning Sciences Graduate Student Conference, Madison (LSGSC), online.
1. **Rao, V.N.V.** (2019, September). *Towards a framework for context selection in statistics instruction* [Oral presentation]. Fourth Annual Learning Sciences Graduate Student Conference (LSGSC), Evanston, Illinois, USA.

CONFERENCE POSTERS (‡FORMER STUDENT OR MENTEE)

52. Hiles, E.K.‡, Stoica, A.I.‡, Hunt, M.Y.‡ & **Rao, V.N.V.** (2025, December). *Providing authentic research experiences for underclassmen at scale: Lessons learned from a pilot implementation of a course-based research experience* [Poster Presentation]. 2025 Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) Conference, online.
51. **Rao, V.N.V.**, & Bye, J.K. (2025, August). *A 'p < .05' boundary effect in the encoding and retrieval of p-values from scientific texts*. Annual Meeting of the Cognitive Science Society, San Francisco, California, USA.
50. Hunt, M.Y.‡, Petrie, M.‡, Findley, K., & **Rao, V.N.V.** (2025, July). *Challenges and opportunities for promoting visual data literacy*. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.
49. Ravishankar, A.‡, & **Rao, V.N.V.** (2025, July). *A debate activite to promote critical thinking in statistics*. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.
48. Hemani, S.‡, Hunt, M.Y.‡, & **Rao, V.N.V.** (2025, July). *Accepting uncertainty depends on the curriculum*. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.

47. Drew, J.M.[‡], Kala, B.[‡], & **Rao, V.N.V.** (2025, July). *Rtutor.AI Data Homeworks – Incorporating AI into Introductory Statistics*. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.
46. Gongati, S.[‡], Jeng, A.[‡], Drew, J.M.[‡], Kala, B.[‡], & **Rao, V.N.V.** (2025, July). *Students' statistical thinking when using generative AI*. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.
45. Kharfan, R.[‡], Bailey, N., & **Rao, V.N.V.** (2025, July). “Who’s not here?”: *Fostering a statistical literacy habit of mind*. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.
44. Petrie, M.[‡], Hunt, M.Y.[‡], Findley, K., & **Rao, V.N.V.** (2025, July). “It’s just quantitative”: *Student approaches to evaluating bias in data visualizations*. Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Research Satellite, Ames, Iowa, USA.
43. Hunt, M.Y., Hemani, S.[‡], & **Rao, V.N.V.** (2025, July). *The Impact of Students’ Tolerance of Uncertainty on Their Learning*. Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Research Satellite, Ames, Iowa, USA.
42. Kala, B.[‡], Bandi, L.[‡], & **Rao, V.N.V.** (2025, July). *Can using AI tools to do statistics broaden participation in STEM?* Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Research Satellite, Ames, Iowa, USA.
41. Ahasan, M.[‡], & **Rao, V.N.V.** (2025, June). *Representation matters: Hyper-minoritized students are more likely to relate and engage with content from a demographically similar instructor* [Poster Presentation]. Annual Meeting of the Canadian Psychological Association (CPA), St. John’s, Newfoundland, Canada.
40. Ahasan, M.[‡], & **Rao, V.N.V.** (2024, December). *Representation matters: Hyper-minoritized students are more likely to relate and engage with content from a demographically similar instructor* [Poster Presentation]. 2024 Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) Conference, online.
39. Marupudi, V., Goyal, S.[‡], Varma, S., & **Rao, V.N.V.** (2024, November). *Understanding the association between human visual clustering and numerosity estimation* [Poster Presentation]. Annual Meeting of the Psychonomic Society, New York City, New York, USA.
38. Ahasan, M.[‡], & **Rao, V.N.V.** (2024, October). *Representation matters: Hyper-minoritized students are more likely to relate and engage with content from a demographically similar instructor* [Poster Presentation]. Association of Psychological Science Global Psychological Summit, online.
37. Fulsher, A., **Rao, V.N.V.**, & Bhati, M.[‡] (2024, July). *Reading by sight or sound: Examining undergraduates’ expository text comprehension between text modalities* [Poster Presentation]. Annual Meeting of the Society for Text & Discourse, Chicago, Illinois, USA.
36. **Rao, V.N.V.**, Fulsher, A., & Bye, J.K. (2024, June). *Boundary effects in graduate students’ memory of the numerical magnitude of p-values* [Poster Presentation]. Annual Meeting of the Mathematical Cognition and Learning Society, Washington, District of Columbia, USA.

35. Goyal, S.[‡], Marupudi, V., & **Rao, V.N.V.** (2024, June). *Individual Differences in Human Clustering* [Poster Presentation]. Annual Meeting of the Mathematical Cognition and Learning Society, Washington, District of Columbia, USA.
34. Marupudi, V., Goyal, S.[‡], Varma, S., & **Rao, V.N.V.** (2024, June). *Might visual clustering underlie numerosity estimation?* [Poster Presentation]. Annual Meeting of the Mathematical Cognition and Learning Society, Washington, District of Columbia, USA.
33. **Rao, V.N.V.** (2024, June). *Setting the stage for statistics learning* [Poster Presentation]. Electronic Conference on Teaching Statistics (eCOTS), online.
32. **Rao, V.N.V.**, Mader, J.[‡], & Friedlander, E. (2024, May). *A framework for the design of gender inclusive activities* [Poster Presentation]. Annual Meeting of the American Psychological Society (APS), San Francisco, California, USA.
31. Sriramlatha, P.[‡], Vemuri, A.[‡], & **Rao, V.N.V.** (2024, April). *The Influence of Personality on Learning Statistics* [Poster Presentation]. University of Illinois 2024 Undergraduate Research Symposium (URS), Urbana, Illinois, USA.
30. **Rao, V.N.V.**, Mader, J.[‡], & Friedlander, E. (2023, December). *Gender Inclusive Activities and Datasets for Introductory Level Statistics* [Poster Presentation]. 2023 Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) Conference, online.
29. **Rao, V.N.V.** (2023, December). *Setting the stage for statistics learning* [Poster Presentation]. 2023 Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) Conference, online.
28. Jiroutek, M. R., Le, L., Foti, S. J., & **Rao, V.N.V.** (2023, June). *Using Collaborative Keys to promote active learning and student engagement for in-person or online courses* [Posters and Beyond Presentation]. United States Conference on Teaching Statistics (USCOTS), State College, Pennsylvania, USA.
27. Friedlander, E., Mader, J.[‡], & **Rao, V.N.V.** (2023, June). *Gender Inclusive Activities in an Introductory Statistics Class* [Posters and Beyond Presentation]. United States Conference on Teaching Statistics (USCOTS), State College, Pennsylvania, USA.
26. **Rao, V.N.V.**, Mader, J.[‡], & Friedlander, E. (2023, June). *Gender Inclusivity from the Perspective of Non-Cisgender Students* [Poster Presentation]. Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Research Satellite, State College, Pennsylvania, USA.
25. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, August). *Categorical boundaries in graduate students' judgment of effect sizes* [Poster Presentation]. Annual Meeting of the American Psychological Association (APA), Minneapolis, Minnesota, USA.
24. Marupudi, V., Harsch, R. M., Park, J., **Rao, V.N.V.**, Bye, J. K. & Varma, S. (2022, June). *Human use of clustering to solve traveling salesperson problems* [Poster Presentation]. Annual Conference of the Mathematical Cognition and Learning Society (MCLS), Antwerp, Belgium.

23. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, May). *Graduate students in the psychological sciences perceive at categorical boundary when processing p-values across the .05 boundary* [Poster Presentation]. Annual Meeting of the American Psychological Society (APS), Chicago, Illinois, USA.
22. Simpson, M.[‡], & **Rao, V.N.V.** (2022, April). *Association between Generational Trauma and Progressive Dementia Types* [Poster Presentation]. University of Minnesota Center for Cognitive Sciences Spring Research Day, Minneapolis, Minneapolis, USA.
21. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, April). *Graduate students in the psychological sciences perceive at categorical boundary when processing p-values across the .05 boundary* [Poster Presentation]. University of Minnesota Center for Cognitive Sciences Spring Research Day, Minneapolis, Minneapolis, USA.
20. Ancel, E.E.[‡], Smith, M.L.[‡], **Rao, V.N.V.**, & Munson, B. (2022, April). *Does F3-F2 Distance predict transcriptions of preschoolers' /r/ productions?* [Poster Presentation]. University of Minnesota Center for Cognitive Sciences Spring Research Day, Minneapolis, Minneapolis, USA.
19. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, February). *Graduate students' effect size category boundaries* [Poster Presentation]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, Minneapolis, USA.
18. **Rao, V.N.V.** (2022, February). *The logic of statistical tests: A historical analysis* [Poster Presentation]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, Minneapolis, USA.
17. Ancel, E.E.[‡], Smith, M.L.[‡], **Rao, V.N.V.**, & Munson, B. (2021, November). *Does F3-F2 Distance predict transcriptions of preschoolers' /r/ productions?* [Poster Presentation]. 181st Meeting of the Acoustical Society of America (ASA), Seattle, Washington, USA. <https://doi.org/10.1121/10.0007949>
16. **Rao, V.N.V.**, Legacy, C., Brown, J.M., Zieffler, A., & delMas, R. (2021, August). *Data-to-graphs and back: Secondary teachers' reasoning about aesthetic mappings in data visualization* [Poster presentation]. 12th Annual Satellite Conference of the International Association for Statistical Education (IASE), online. <https://iase-web.org/conference/satellite21/>
15. The Link Tank*. (2021, August). *Teaching statistics students psychology: Using podcasts to integrate context and content* [Poster presentation]. Annual Meeting of the American Psychological Association (APA), online.
*4 scholars (alphabetical order): Koenen, R., **Rao, V.N.V.**, Rubin, N., & Sullivan, M.
14. McNamara, A., Beckman, M., Legacy, C., Zieffler, A., delMas, R.C., & **Rao, V.N.V.** (2021, August). *Integrating computation in statistics: Instructional decisions for Teaching R* [Speed presentation]. Joint Statistical Meetings (JSM), Seattle, Washington, USA.
52. Marupudi, V., Harsch, R.M., **Rao, V.N.V.**, Bye, J.K., Park, J., & Varma, S. (2021, July). *The role of clustering in the efficient solution of small Traveling Salesperson Problems* [Poster presentation]. Annual Meeting of the Cognitive Science Society, Vienna, Austria.

12. **Rao, V.N.V.**, Legacy, C.A., & Zieffler, A. (2021, June). *Students' perspectives on entering a data science career after experiential learning with local community organizations* [[Poster presentation](#)]. United States Conference on Teaching Statistics (USCOTS), online.
 11. McNamara, A., Zieffler, A., Beckman, M., Legacy, C., Basner, E.B., delMas, R., & **Rao, V.N.V.** (2021, June). *Computing in the statistics curriculum: Lessons learned from the educational sciences* [[Poster presentation](#)]. United States Conference on Teaching Statistics (USCOTS), online.
 10. Running, K., Coddng, R.S., **Rao, V.N.V.**, Goodridge, A., Kromminga, K.R., Will, K., Sullivan, M., & Varma, S. (2021, February). *Determining effective fraction instruction sequences* [[Poster presentation](#)]. Annual Meeting of the National Association of School Psychologists (NASP), online.
 9. **Rao, V.N.V.**, Running, K., & Coddng, R.S. (2021, February). *Choosing a statistical model amidst ceiling and floor effects* [[Poster presentation](#)]. Annual Meeting of the National Association of School Psychologists (NASP), online.
 8. **Rao, V.N.V.** (2020, September). *Investigating multidimensionality in the Comprehensive Assessment of Outcomes in Statistics* [[Poster presentation](#)]. Annual Meeting of the National Council of Measurement in Education (NCME), online.
 7. Marupudi, V., **Rao, V.N.V.**, Park, J., Harsch, R., Bye, J.K., & Varma, S. (2020, July). *Clustering as a precursor to efficient and near-optimal solution of small instances of the Traveling Salesperson Problem (TSP)* [[Poster presentation](#)]. Annual Meeting of the Cognitive Science Society, online.
 6. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2020, June). *Mental representation of p-values: Does a categorical perception effect exist?* [[Poster presentation](#)]. University of Minnesota Center for Cognitive Sciences Spring Research Day, online.
 5. Marupudi, V., **Rao, V.N.V.**, Park, J., Harsch, R., Bye, J.K., & Varma, S. (2020, June). *Clustering as a core mathematical ability for solving graph-theoretic problems such as the Traveling Salesperson Problem (TSP)* [[Poster presentation](#)]. Annual Conference of the Mathematical Cognition and Learning Society (MCLS), Dublin, Ireland. (conference cancelled)
 4. **Rao, V.N.V.** & Chávez, C. (2020, February). *On the Utilization of the Comprehensive Assessment of Outcomes in Statistics* [[Poster presentation](#)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, Minneapolis, USA.
 3. Marupudi, V., **Rao, V.N.V.**, Park, J., Harsch, R., Bye, J.K., & Varma, S. (2020, February). *The consistency of human clustering* [[Poster presentation](#)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, Minneapolis, USA.
 2. The Link Tank*. (2020, February). *A cognitive behavioural therapy lesson design for statistics anxiety* [[Poster presentation](#)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, Minneapolis, USA.
- *5 scholars (alphabetical order): Baker, J., DeLiema, D., Loiselle, T., **Rao, V.N.V.**, & Yang, W.

1. **Rao, V.N.V.** (2019, May). *Utilizing distributed practice assignments to develop students' statistical literacy in an online class* [Poster presentation]. United States Conference on Teaching Statistics (USCOTS), State College, Pennsylvania, USA.

CONFERENCE PROCEEDINGS ABSTRACTS

4. **Rao, V.N.V.**, & Carpenter, Z. (2022). Openness and Uncertainty: A forum on the psychology of science. In *Proceedings of the 2022 Learning Sciences Graduate Student Conference* (pp. 93-94). Retrieved from <https://www.lsgsc.org/proceedings>.
3. **Rao, V.N.V.**, Legacy, C., Brown, J.M., Zieffler, A., & delMas, R. (2021). Data-to-graphs and back: Secondary teachers' reasoning about aesthetic mappings in data visualization. In R. Helenius & E. Falck (Eds.), *Statistics Education in the Era of Data Science: Proceedings of the Satellite Conference of the International Association for Statistical Education*. https://iase-web.org/Conference_Proceedings.php.
2. Marupudi, V., **Rao, V.N.V.**, Park, J., Harsch, R., Bye, J.K., & Varma, S. (2020). Clustering as a precursor to efficient and near-optimal solution of small instances of the Traveling Salesperson Problem (TSP). In S. Denison, M. Mack, Y. Xu, & B.C. Armstrong (Eds.), *Proceedings of the 42nd Annual Conference of the Cognitive Science Society* (p. 1342). <https://cogsci.mindmodeling.org/2020/>.
1. **Rao, V.N.V.** (2019). Towards a framework for the selection of contexts in statistics instruction. In *Proceedings of the 2019 Learning Sciences Graduate Student Conference* (pp. 213-215). Retrieved from <https://www.lsgsc.org/proceedings>.

OTHER PUBLICATIONS ([†]FORMER STUDENT OR MENTEE)

11. May, N.[‡], & **Rao, V.N.V.** (2025, January). Engaging Connections: Cooperative Learning in an Online Asynchronous Setting. *EDUCAUSE Review*. Available at <https://er.educause.edu/articles/2025/1/engaging-connections-cooperative-learning-in-an-online-asynchronous-setting>
10. **Rao, V.N.V.** (2024, September). Fully Me: How My Religion Inspired a Teaching Intervention (with Empirical Evidence). *E-xcellence in Teaching*. Available at <https://teachpsych.org/E-xcellence-in-Teaching-Blog/>.
9. **Rao, V.N.V.** (2023). ' $P < .05$ ' as a Categorical Boundary in Encoding and Retrieval of Scientific Abstracts. Masters Thesis. University of Minnesota, Minneapolis, USA.
8. **Rao, V.N.V.** (2023). *A Multi-Modal Multiple Descriptive Case Study of Graduate Students' Statistical Thinking in Statistical Tests Seven Months After Completing a Simulation-Based Introductory Level Course*. Doctoral dissertation. University of Minnesota, Minneapolis, USA.

7. Zieffler, A., & Catalysts for Change. (2022). Pensamiento Estadístico: Un Enfoque de Simulación para Modelar la Incertidumbre (4.3rd ed., P. Vivas Corrales & **V.N.V. Rao**, Trans.). Minneapolis, MN: Catalyst Press. <http://RaoVNV.github.io/pensamiento-estadistico/>
6. **Rao, V.N.V.** (2022). *Graduate students' thinking in statistical tests: A multi-modal multiple descriptive case study*. Unpublished dissertation prospectus, University of Minnesota, Minneapolis, USA.
5. Neufeld, G., Estrada Aguilera, S., Goedert, K., Peters, J., **Rao, V.N.V.**, Sathy, V., Smith, T., & Hartnett, J. (2022). *Statistical Literacy, Reasoning, and Thinking: Guidelines 2.0 – Presidential Task Force Subcommittee on Introductory Psychology Statistical Literacy*. Society for the Teaching of Psychology. <http://teachpsych.org/page-1863179>
4. **Rao, V.N.V.** (2021, April). From happy hour to co-author: How I found an academic home. *SPARK*. Available at sparkezine.com.
3. **Rao, V.N.V.** (2021). *Students' understanding and reasoning of simulation-based significance testing*. [Unpublished preliminary oral exam paper](#), University of Minnesota, Minneapolis, USA.
2. **Rao, V.N.V.** (2020). *Interpretations and uses of the Comprehensive Assessment of Outcomes in Statistics*. [Unpublished preliminary written exam paper](#), University of Minnesota, Minneapolis, USA.
1. **Rao, V.N.V.** (2019). *Investigating multidimensionality in student responses to the Comprehensive Assessment of Outcomes in Statistics*. [Unpublished pre-dissertation paper](#), University of Minnesota, Minneapolis, USA.

WORKSHOPS, WEBINARS, AND TRAINING SESSIONS

4. Legacy, C., Zieffler, A., **Rao, V.N.V.**, & delMas, R. (2025, November). *A collection of SERJ papers by new researchers* [[Webinar](#)]. International Association for Statistical Education, online. Sponsored by Dr. Anna Ferguson.
3. **Rao, V.N.V.**, & Bailey, N. (2025, July). *Essentials of the Scholarship of Teaching Statistics* [[Breakout Session](#)]. United States Conference on Teaching Statistics (USCOTS), Ames, Iowa, USA.
2. **Rao, V.N.V.** (2023, May). *Principles of Statistical Inference for Program Evaluation* [Workshop]. United Nations Secretariat, Office of Internal Oversight Services, Inspection and Evaluation Division, online. Sponsored by Dr. Hanife Cakici and Angela Arévalo.
1. **Rao, V.N.V.** (2021, June). *Simulation-based Inference with R for ANOVA Design Experiments* [[Workshop](#)]. Psychology Postgraduate Affairs Group, Data Simulation Summer School, online. Sponsored by Dr. Oliver Clark and Jenny Terry.

SERVICE TO THE DEPARTMENT, COLLEGE, AND UNIVERSITY

University of Illinois Urbana-Champaign

Department of Statistics, Online Course Development Committee Chair	2024 – 2026
Department of Statistics, Social and Activities Committee	2024 – 2025
Department of Statistics, Undergraduate Research Committee	2024 – 2026
Department of Statistics, Data Science Education Committee	2024 – 2025
Campus Faculty Senate, senator	2024 – 2025
College of Liberal Arts and Sciences, Committee on Academic Standards	2024 – 2025
Department of Statistics, Online Course Development Committee	2023 – 2024
Department of Statistics, Teaching Assistant Training Committee	2023 – 2024
Pi Mu Epsilon Illinois Alpha Chapter, chapter president	<u>2007</u> – 2008
Pi Mu Epsilon Illinois Alpha Chapter, chapter vice president	2006 – 2007

University of Minnesota Twin-Cities

Quantitative Methods in Education Student Brown Bag, founder	2018 – 2021
Council of Graduate Students, Educational Psychology student representative	2018 – 2019

SERVICE TO THE FIELD

Statistics Education Research Journal, associate editor	2025 – present
2026 Electronic Conference on Teaching Statistics, program committee	2025 – 2026
Journal of Statistics and Data Science Education, associate editor	2024 – present
Researchers of Statistics Education (RoSE) Network, outreach director	2024 – 2025
NSF DRK12 Panel Reviewer	2024
2024 Electronic Conference on Teaching Statistics, program committee	2023 – 2024
UIUC Statistics Teaching and Learning Research Lab, founder and director	2023 – present
Researchers of Statistics Education (RoSE) Network, deputy director	2022 – 2023
American Educational Research Association, annual conference reviewer	<u>2021</u> – 2022
Society for the Teaching of Psychology, Presidential Task Force on Statistical Literacy, Reasoning, and Thinking, task force member	<u>2021</u>
Statistics Education – Engagement and Development for Students, founder	2020 – 2023
CAUSE Undergraduate Statistics PROject Competition, judge	<u>2020</u> – 2024
AP Statistics Exam, reader	2020
Washington Statistical Society, poster competition judge	<u>2014</u>
American Society for Testing and Materials, subcommittee E11.10 & E11.30	2011 – 2013

JOURNAL PEER REVIEWS

Journal of Mathematical Behavior (1 paper)	2026
ZDM – Mathematics Education (1 paper)	2024
Cognition and Instruction (1 paper)	2023
Journal of Statistics and Data Science Education (12 papers)	2021 – present
Statistics Education Research Journal (9 papers)	2021 – present
Technology Innovations in Statistics Education (3 papers)	2021 – present

UNDERGRADUATE STUDENT RESEARCH ASSISTANTS / MENTEES

Sophia Stierwalt – Attitudes Towards and Perceptions of Statistics	2025
Karena Liang – Personality Traits and Attitudes Towards Statistics	2025
Samhita Periyayaham, Preetha Manjunath, & Madeline Hunt – Statistics-situated Tolerance of Uncertainty	2025
Preetha Manjunath – Attitudes Towards AI	2025
Reem Kharfan – Developing Students’ Statistical Literacy Habits of Mind	2024 – 2025
Aman Ravishankar – Debate Activities in Statistics Education	2024 – 2025
Ella Hiles – Studying the Impact of the TikTok Ban on Gen Z’s Mental Health	2024 – 2025
Samhita Periyayaham – A Culture-Specific Therapy Program for Individuals with Anxiety Disorders in South India	2024 – 2025
Alexandra Stoica – Word Perception of Personality Disorder Diagnostic Criteria	2024 – 2025
Mia Petrie & Madeline Hunt – Building a Modern Assessment for Statistical Literacy	2024 – 2025
Madeline Hunt & Samin Hemani – Tolerance of Uncertainty and Learning Statistics	2024 – 2025
Bhuvan Kala, Julianna Drew, & Sanjana Gongati – Harnessing GPT Technologies to Develop Students’ Statistical and Computational Thinking	2024 – 2025
Daniel Hogan – Mind Wandering when Learning Statistics	2024
Priyadarshini Sriramlatha & Aparajita Vemuri – Personality Psychological Antecedents to Learning Statistics	2024
Vishnu Sadhu – Why Do People Purchase Life Insurance?	2023
Shubh Goyal – Individuals Differences in Human Clustering	2023

GRADUATE STUDENT RESEARCH ASSISTANTS / MENTEES

Amos Jeng, Tiffany Reyes, & Laura Bandi – Harnessing AI to Develop Students’ Statistical Thinking	2024 – 2025
Maisha Ahsan – Teacher-Student Identity Congruency and Students’ Sense of Belonging	2024 – 2025

HONORS, AWARDS, AND FELLOWSHIPS

Quantitative Methods in Education Graduate Student Research Award, \$100	2023
University of Minnesota Graduate School Excellence in Teaching Award, \$500	2023
Quantitative Methods in Education Graduate Student Teaching Award, \$100	2022
UMN Thank-a-Teacher Program, recipient of 14 letters	2020 – 2022
Best Presentation, 36th Annual PsyPAG Conference	2021
Cognitive Science Society Disciplinary Diversity & Integration Award, \$1,000	2021
Quantitative Methods in Education Graduate Student Leadership Award, \$100	2019
CEHD Graduate Student Fellowship, \$25,000	2018 – 2019
Russell W Burris Memorial Fellowship in Educational Psychology, \$5,000	2018 – 2019
Outstanding Group Performance in Data Dissemination, HRSA	2015

Outstanding Group Performance in Communications Innovations, HRSA	2015
Data Request Process Improvement, HRSA, \$1,000	2015
Customer Service Process Improvement, HRSA, \$1,000	2014
Excellence in Quantitative Analysis, HRSA, \$1,000	2014
Excellence in Innovative Analyses, US Census Bureau, \$1,000	2011
Data Quality Process Improvement, US Census Bureau, \$500	2010
<i>Census2010</i> Operations Management, US Census Bureau, \$500	2010

TEACHING EXPERIENCE

University of Illinois, Urbana, IL

STAT 100 – Statistics [Online] (466 students)	2025 – Fall
STAT 100 – Statistics [In-Person] (685 students)	2025 – Fall
STAT 390 – Individual Study (25 students)	2025 – Fall
STAT 100 – Statistics [Online] (84 students)	2025 – Summer
STAT 100 – Statistics [Online] (481 students)	2025 – Spring
STAT 100 – Statistics [In-Person] (597 students)	2025 – Spring
STAT 100 – Statistics [Online] (480 students)	2024 – Fall
STAT 100 – Statistics [In-Person] (622 students)	2024 – Fall
STAT 390 – Individual Study (10 students)	2024 – Fall
STAT 100 – Statistics [Online] (108 students)	2024 – Summer
STAT 390 – Individual Study (10 students)	2024 – Spring
STAT 100 – Statistics [In-Person] (598 students)	2024 – Spring
STAT 100 – Statistics [In-Person] (441 students)	2024 – Spring
STAT 100 – Statistics [In-Person] (608 students)	2023 – Fall
STAT 100 – Statistics [In-Person] (437 students)	2023 – Fall

University of Minnesota, Minneapolis, MN

EPSY 5621 – Introductory Statistical Methods [Online] (39 students)	2022 – Summer
EPSY 3264 – Basic and Applied Statistics [In-Person] (45 students)	2022 – Spring
EPSY 5621 – Introductory Statistical Methods [In-Person] (18 students)	2021 – Fall
EPSY 3264 – Basic and Applied Statistics [In-Person] (45 students)	2021 – Fall
EPSY 5621 – Introductory Statistical Methods [Online] (21 students)	2021 – Spring
EPSY 5621 – Introductory Statistical Methods [Remote] (19 students)	2020 – Fall
EPSY 5621 – Introductory Statistical Methods [Online] (38 students)	2020 – Spring
EPSY 5621 – Introductory Statistical Methods [Online] (31 students)	2019 – Fall

George Washington University, Washington, DC

HSCI 2117 – Introduction to Statistics [Online] (6 students)	2024 – Summer
HSCI 2117 – Introduction to Statistics [Online] (13 students)	2023 – Summer
HSCI 2117 – Introduction to Statistics [Online] (14 students)	2023 – Spring
HSCI 3117 – Principles of Biostatistics [Online] (8 students)	2023 – Spring
HSCI 2117 – Introduction to Statistics [Online] (6 students)	2022 – Summer
HSCI 2117 – Introduction to Statistics [Online] (15 students)	2022 – Spring
HSCI 2117 – Principles of Biostatistics [Online] (11 students)	2022 – Spring
HSCI 2117 – Introduction to Statistics [Online] (19 students)	2021 – Fall

HSCI 2117 – Introduction to Statistics [Online] (18 students)	2021 – Summer
HSCI 2117 – Introduction to Statistics [Online] (20 students)	2021 – Spring
HSCI 2117 – Introduction to Statistics [Online] (16 students)	2020 – Fall
HSCI 3117 – Principles of Biostatistics [Online] (20 students)	2020 – Summer
HSCI 2117 – Introduction to Statistics [Online] (20 students)	2020 – Summer
HSCI 2117 – Introduction to Statistics [Online] (16 students)	2020 – Spring
HSCI 3117 – Principles of Biostatistics [Online] (20 students)	2020 – Spring
HSCI 2117 – Introduction to Statistics [Online] (16 students)	2019 – Fall
HSCI 3117 – Principles of Biostatistics [Online] (20 students)	2019 – Summer
HSCI 2117 – Introduction to Statistics [Online] (17 students)	2019 – Summer
HSCI 2117 – Introduction to Statistics [Online] (29 students)	2019 – Spring
HSCI 3117 – Principles of Biostatistics [Online] (24 students)	2019 – Spring
HSCI 2117 – Introduction to Statistics [Online] (20 students)	2018 – Fall
HSCI 3117 – Principles of Biostatistics [Online] (20 students)	2018 – Fall
HSCI 2117 – Introduction to Statistics [Online] (18 students)	2018 – Summer
HSCI 2117 – Introduction to Statistics [Online] (19 students)	2018 – Summer
HSCI 2117 – Introduction to Statistics [Online] (16 students)	2018 – Spring
HSCI 2117 – Introduction to Statistics [Online] (32 students)	2018 – Spring
HSCI 3117 – Principles of Biostatistics [Online] (7 students)	2017 – Fall
HSCI 2117 – Introduction to Statistics [Online] (13 students)	2017 – Summer
HSCI 2117 – Introduction to Statistics [Online] (25 students)	2017 – Summer
HSCI 2117 – Introduction to Statistics [Online] (28 students)	2017 – Spring
HSCI 2117 – Introduction to Statistics [Online] (24 students)	2016 – Fall
HSCI 2117 – Introduction to Statistics [Online] (18 students)	2016 – Summer
HSCI 2117 – Introduction to Statistics [Online] (18 students)	2016 – Spring