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| V.N. Vimal Rao | [RaoVNV@Illinois.edu](mailto:RaoVNV@Illinois.edu) |
| [RaoVNV.github.io](https://RaoVNV.github.io/) |

# Positions

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| --- | --- |
| **University of Illinois at Urbana-Champaign** |  |
| Department of Statistics, Champaign, IL |  |
| Department of Educational Psychology, 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 Assistant Professor | 2024 – present |
| Course Director, HSCI 2117/3117 | 2017 – 2021 |
| Adjunct Instructor | 2016 – 2023 |
|  |  |
| **Health Resources and Services Administration** |  |
| Division of Policy and Data, HIV/AIDS Bureau, Rockville, MD |  |
| Chief (GS-1530-14), Data Management and Analysis Branch | 2015 – 2016 |
| Health Statistician (GS-1530-13), Data Management Branch | 2014 – 2015 |
|  |  |
| **US Census Bureau** |  |
| Decennial Statistical Studies Division, Suitland, MD |  |
| Mathematical Statistician (GS-1529-9/11/12), Quality Assurance Branch | 2010 – 2014 |
| National Processing Center, Jeffersonville, IN |  |
| Mathematical Statistician (GS-1529-7/9/11), Statistical Methods Section | 2009 – 2010 |

# Education

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| --- | --- |
| **PhD** EducationalPsychology, University of Minnesota | 2023 |
| Quantitative Methods in Education, Statistics Education |  |
| Advisors: Robert delMas and Andrew Zieffler |  |
| Committee Members: Panayiota Kendeou and Erin Baldinger |  |
|  |  |
| **MA** EducationalPsychology, 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 |  |

# Peer-Reviewed Publications (‡Former Student or Mentee)

1. Legacy, C., Zieffler, A., **Rao, V.N.V.**, & delMas, R. (in press). Vampires and star-crossed lovers: Secondary teachers’ reasoning about the connections between multivariate data and visualization. *Statistics Education Research Journal.*
2. 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>
3. **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>
4. 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 /ɹ/ and /w/. *Journal of Speech, Language, and Hearing Research, 66*(9), 3413-3427*.* <https://doi.org/10.1044/2023_JSLHR-22-00713>
5. **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>.
6. 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>
8. 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>
9. **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>.
10. **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>
11. 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>.
12. 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>.
13. **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>.

# Publications Under Review (‡Former Student or Mentee)

1. May, N.‡, & **Rao, V.N.V.** (under review). *Achieving promotive interactions in online courses.*

# Publications in Preparation (‡Former Student or Mentee)

1. **Rao, V.N.V.,** Ge, X. (in preparation). *Rtutor.AI: Marrying R to ChatGPT to Support the Development of Students’ Statistical and Computational Thinking*.
2. **Rao, V.N.V.** (in preparation). *How graduate students think about statistical tests.*
3. **Rao, V.N.V.**, Riegelman, A., Hurtado, I. L., Lisinker, R., & delMas, R. (in preparation). *A review of research uses of the Comprehensive Assessment of Outcomes in Statistics*. Retrieved from osf.io/yf3zh.

# Grants Awarded

1. 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 – 2025

1. 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 (PI: Kelly Findley)

Award: $7,500

Project Period: 2024 – 2025

1. 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

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

# Invited Talks

1. **Rao, V.N.V.** (2024, November). *On the Cognition of p-values*. [Invited Talk]. Cognitive Science of Teaching & Learning Division Seminar, University of Illinois, Urbana, Illinois. Sponsored by Dr. Cynthia D’Angelo.
2. 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](https://rss.org.uk/training-events/events/events-2024/sections/biostatistical-literacy-what-is-it,-and-how-can-we/)]. Royal Statistical Society Teaching Section, online. Sponsored by Dr. Elinor Jones.
3. **Rao, V.N.V.** (2023, October). *Intro Stats in a GPT World* [Invited Talk]. Mathematics Learning Research Group, Michigan State University, East Lansing, Michigan. Sponsored by Dr. Jenny Green.
4. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, September). *The Psychology of Statistics* [[Invited Talk](https://science.psu.edu/stat/smac-talks/fa22)]. Stochastic Modeling and Computational Statistics, Pennsylvania State University, State College, Pennsylvania. Sponsored by Dr. Matthew Beckman and Dr. Stephen Berg.
5. **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. Sponsored by Dr. Jim Stigler and Dr. Karen Givvin.
6. **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. Sponsored by Dr. Robert Goldstone.
7. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, October). *Statistical Significance and the Categorization of p-values* [[Invited Talk](https://mediaspace.umn.edu/media/t/1_m1o2ehyh)]. Psychological Foundations of Education Research Talks, University of Minnesota, Minneapolis, Minnesota. Sponsored by Dr. Martin Van Boekel.

# Conference Talks and Presentations (‡Former Student or Mentee)

1. 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.
2. **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.
3. 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.
4. **Rao, V.N.V.**, Mader, J.‡, & Friedlander, E. (2023, June). *Gender Inclusivity from the Perspective of Non-Cisgender Students* [[Lightning Talk](https://www.causeweb.org/cause/uscots/uscots23/f03-gender-inclusivity-perspective-non-cisgender-students)]. Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) Research Satellite, State College, Pennsylvania.
5. 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](https://www.causeweb.org/cause/uscots/uscots23/3a-biostatistical-literacy-what-it-and-how-can-we-teach-it-room-107)]. United States Conference on Teaching Statistics (USCOTS), State College, Pennsylvania.
6. 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](https://par.nsf.gov/biblio/10517618)]. Annual Meeting of the American Educational Research Association (AERA), Chicago, Illinois.
7. **Rao, V.N.V.** & Carpenter, Z. (2022, October). *Openness and Uncertainty: A forum on the psychology of science* [[Forum](https://www.lsgsc.org/program)]. Seventh Annual Learning Sciences Graduate Student Conference (LSGSC), Bloomington, Indiana.
8. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2022, September). *Graduate students’ effect size categorical boundaries* [[Paper Presentation](https://icots.info/11/?programme)]. The Eleventh International Conference on Teaching Statistics (ICOTS-11), Rosario, Argentina.
9. 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](https://escholarship.org/uc/item/3t16j57m)]*.* 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](https://causeweb.org/cause/ecots/ecots22/program/breakout/12)]. Electronic Conference on Teaching Statistics (eCOTS).
11. 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.
12. 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](https://pediatrictraumasociety.org/meeting/abstracts/2021/49.cgi)]. Annual Meeting of the Pediatric Trauma Society, Baltimore, MD.
13. 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](https://www.dropbox.com/s/1yhi7vrycaijoqc/STP%20Taskforce%20on%20Statistical%20Literacy%20-%20APA%202021.mp4?dl=0)]. Annual Meeting of the American Psychological Association (APA), San Diego, California.

\*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.

1. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, July). *More than just a name: The psychological effects of ‘Statistical Significance’* [[Oral presentation](https://docs.google.com/document/d/1oejfervYtNeH36UM9qfasMpIgnqEw8vW0BVm_pxI6J8/edit)]. The 36th Annual Psychology Postgraduate Affairs Group Conference (PsyPAG), online.
2. The Link Tank\* (2021, July). *The promise of video-based research methods in psychology* [[Oral presentation](https://tinyurl.com/LinkTankPsyPAG2021)]. 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.

1. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, July). *Categorical perception of p-values* [[Paper presentation](https://tinyurl.com/RaoByeVarma2021CogSci)]. Annual Meeting of the Cognitive Science Society, Vienna, Austria.
2. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2021, April). *The psychological reality of the learned “p < 0.05” barrier* [[Paper presentation](https://tinyurl.com/y2rbfxcy)]. Annual Meeting of the American Educational Research Association (AERA), virtual.
3. **Rao, V.N.V.** (2020, November). *A Null Hypothesis Story* [[Lightning Talk](https://lsgsc2020.sched.com/event/eywo/stem-epistemologies-lightning-talks)]. Fifth Annual Learning Sciences Graduate Student Conference, Madison (LSGSC), Wisconsin.
4. **Rao, V.N.V.** (2019, September). *Towards a framework for context selection in statistics instruction* [[Oral presentation](https://RaoVNV.github.io/Contexts/)]. Fourth Annual Learning Sciences Graduate Student Conference (LSGSC), Evanston, Illinois.

# Conference Posters (‡Former Student or Mentee)

1. 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, USA.
2. 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.
3. 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, IL, USA.
4. **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, DC, USA.
5. 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, DC, USA.
6. 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, DC, USA.
7. **Rao, V.N.V.** (2024, June). *Setting the stage for statistics learning* [Poster Presentation]. Electronic Conference on Teaching Statistics (eCOTS), online.
8. **Rao, V.N.V.**, Mader, J.‡, & Friedlander, E. (2024, May). *A framework for the design of gender inclusive activies* [Poster Presentation]. Annual Meeting of the American Psychological Society (APS), San Francisco, CA, USA.
9. 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, IL, USA.
10. **Rao, V.N.V.**, Mader, J.‡, & Friedlander, E. (2023, December). *Gender Inclusive Activities and Datasets for Introductory Level Statistics* [Poster Presentation]. Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) 2023 Virtual Conference, online.
11. **Rao, V.N.V.** (2023, December). *Setting the stage for statistics learning* [Poster Presentation]. Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) 2023 Virtual Conference, online.
12. 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, PA, USA.
13. 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, PA, USA.
14. **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, PA, USA.
15. **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, MN, USA.
16. 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.
17. **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, IL, USA.
18. 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, MN, USA.
19. **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, MN, 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, MN, USA.
21. **Rao, V.N.V.,** Bye, J.K., & Varma, S. (2022, February). *Graduate students’ effect size category boundaries* [[Poster Presentation](https://docs.google.com/presentation/d/1p5ls5PBSvhg9c32FPEm67xrciTYPwxSIBBxoZYyLDVo/edit?usp=sharing)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, MN, USA.
22. **Rao, V.N.V.** (2022, February). *The logic of statistical tests: A historical analysis* [[Poster Presentation](https://docs.google.com/presentation/d/1PWVZKRRcRU8SkpaNft6BaNgTebz_XhQsIFNkCoXQhh0/edit#slide=id.g10ddebd5da7_0_56)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, MN, USA.
23. 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, WA, USA. <https://doi.org/10.1121/10.0007949>
24. **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](https://github.com/RaoVNV/Data-to-Graphs/blob/main/iase-2021-poster.pdf)]. 12th Annual Satellite Conference of the International Association for Statistical Education (IASE), online. <https://iase-web.org/conference/satellite21/>
25. The Link Tank\*.(2021, August). *Teaching statistics students psychology: Using podcasts to integrate context and content* [[Poster presentation](https://RaoVNV.github.io/Contexts/)]. Annual Meeting of the American Psychological Association (APA), San Diego, CA, USA.

\*4 scholars (alphabetical order): Koenen, R., **Rao, V.N.V.**, Rubin, N., & Sullivan, M.

1. 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, WA, USA.
2. 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](https://gitlab.com/vijaymarupudi/2021-tsp-poster/-/blob/master/poster.pdf)]. Annual Meeting of the Cognitive Science Society, Vienna, Austria.
3. **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](https://www.causeweb.org/cause/uscots/uscots21/th-22-students-perspectives-entering-data-science-career-after-experiential-learning)]. United States Conference on Teaching Statistics (USCOTS), online.
4. McNamara, A., Zieffler, A., Beckman, M., Legacy, C., Basner, E.B., delMas, R., & **Rao, V.N.V**. (2021, June). C*omputing in the statistics curriulum: Lessons learned from the educational sciences* [[Poster presentation](https://www.causeweb.org/cause/uscots/uscots21/tu-03-computing-statistics-curriculum-lessons-learned-educational-sciences)]. United States Conference on Teaching Statistics (USCOTS), online.
5. Running, K., Codding, 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](https://apps.nasponline.org/professional-development/convention/session-detail.aspx?id=19864)]. Annual Meeting of the National Association of School Psychologists (NASP), Salt Lake City, UT, USA.
6. **Rao, V.N.V.**, Running, K., & Codding, R.S. (2021, February). *Choosing a statistical model amidst ceiling and floor effects* [[Poster presentation](https://github.com/RaoVNV/NASP2021/)]. Annual Meeting of the National Association of School Psychologists (NASP), Salt Lake City, UT, USA.
7. **Rao, V.N.V.** (2020, September). *Investigating multidimensionality in the Comprehensive Assessment of Outcomes in Statistics* [[Poster presentation](http://tinyurl.com/vd7prxf)]. Annual Meeting of the National Council of Measurement in Education (NCME), San Francisco, CA, USA.
8. 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](https://cogsci.mindmodeling.org/2020/papers/0269/0269.pdf)]. Annual Meeting of the Cognitive Science Society, Toronto, Canada.
9. **Rao, V.N.V.**, Bye, J.K., & Varma, S. (2020, June). *Mental representation of p-values: Does a categorical perception effect exist?* [[Poster presentation](https://flipgrid.com/eacbc4b5)]. University of Minnesota Center for Cognitive Sciences Spring Research Day, Minneapolis, MN, USA.
10. 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)
11. **Rao, V.N.V.** & Chávez, C. (2020, February). *On the Utilization of the Comprehensive Assessment of Outcomes in Statistics* [[Poster presentation](https://github.com/RaoVNV/posters/blob/master/GSRD%202020%20CAOS.pdf)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, MN, USA.
12. Marupudi, V., **Rao, V.N.V.**, Park, J., Harsch, R., Bye, J.K., & Varma, S. (2020, February). *The consistency of human clustering* [[Poster presentation](https://github.com/RaoVNV/posters/blob/master/2020%20GSRD%20Clustering.pdf)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, MN, USA.
13. The Link Tank\*. (2020, February). *A cognitive behavioural therapy lesson design for statistics anxiety* [[Poster presentation](https://github.com/RaoVNV/posters/blob/master/2020%20GSRD%20Anxiety.pdf)]. University of Minnesota Department of Educational Psychology Graduate Student Research Day, Minneapolis, MN, 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](https://www.causeweb.org/cause/uscots/uscots19/posters/2-22)]. United States Conference on Teaching Statistics (USCOTS), State College, PA, USA.

# Conference Proceedings Abstracts

1. **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>.
2. **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>.
3. 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/>.
4. **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

1. **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/](https://teachpsych.org/E-xcellence-in-Teaching-Blog/13404556).
2. **Rao, V.N.V.** (2023). *‘P < .05’ as a Categorical Boundary in Encoding and Retrieval of Scientific Abstracts*. Masters Thesis. University of Minnesota, Minneapolis.
3. **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.
4. 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/>
5. **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.
6. 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>
7. **Rao, V.N.V.** (2021, April). From happy hour to co-author: How I found an academic home. *SPARK*. Available at [sparkezine.com](https://sparkezine.com/2021/04/08/from-happy-hour-to-co-author-how-i-found-an-academic-home/).
8. **Rao, V.N.V.** (2021). *Students’ understanding and reasoning of simulation-based significance testing.* [Unpublished preliminary oral exam paper](https://github.com/RaoVNV/posters/blob/master/2021%20Oral%20PreLim%20Null.pdf), University of Minnesota, Minneapolis.
9. **Rao, V.N.V.** (2020). *Interpretations and uses of the Comprehensive Assessment of Outcomes in Statistics.* [Unpublished preliminary written exam paper](https://github.com/RaoVNV/posters/blob/master/2020%20Written%20PreLim%20CAOS.pdf), University of Minnesota, Minneapolis.
10. **Rao, V.N.V.** (2019). *Investigating multidimensionality in student responses to the Comprehensive Assessment of Outcomes in Statistics.* [Unpublished pre-dissertation paper](https://github.com/RaoVNV/posters/blob/master/2019%20PreDiss%20CAOS.pdf), University of Minnesota, Minneapolis.

# Workshops

1. **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.
2. **Rao, V.N.V.** (2021, June). *Simulation-based Inference with R for ANOVA Design Experiments* [[Workshop](https://www.youtube.com/watch?v=7-sCyVyqMY4)]. Psychology Postgraduate Affairs Group, Data Simulation Summer School, online. Sponsored by Dr. Oliver Clark and Jenny Terry.

# Service to the Department, College, and University

|  |  |
| --- | --- |
| Department of Statistics, Online Course Development Committee Chair | 2024 – 2025 |
| Department of Statistics, Social and Activities Committee | 2024 – 2025 |
| Department of Statistics, Undergraduate Research Committee | 2024 – 2025 |
| Department of Statistics, Data Science Education Committee | 2024 – 2025 |
| Campus Faculty Senate | 2024 – 2026 |
| 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 |

# Service to the Field

|  |  |
| --- | --- |
| Journal of Statistics and Data Science Education, associate editor | 2025 – 2027 |
| Researchers of Statistics Education ([RoSE](https://www.rose-network.org/)) Network, outreach director | 2024 – present |
| 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](https://www.rose-network.org/)) Network, deputy director | 2022 – 2023 |
| American Educational Research Association, annual conference reviewer | [2021](https://www.aera.net/Portals/38/2021%20AERA%20Annual%20Meeting%20Reviewer%20Acknowledgements.pdf) – 2022 |
| Society for the Teaching of Psychology, Presidential Task Force on Statistical Literacy, Reasoning, and Thinking, task force member | [2021](http://teachpsych.org/President-Letter-Blog/9539371) |
| Statistics Education – Engagement and Development for Students, founder | 2020 – present |
| CAUSE Undergraduate Statistics PROject Competition, judge | [2020](https://www.causeweb.org/usproc/) – 2024 |
| AP Statistics Exam, reader | 2020 |
| Washington Statistical Society, poster competition judge | [2014](http://www.washstat.org/newsletters/WSS1405.PDF) |
| American Society for Testing and Materials, subcommittee E11.10 & E11.30 | 2011 – 2013 |

# Service to the Community

|  |  |
| --- | --- |
| The Link Tank (UMN), founder | [2019 – 2022](http://z.umn.edu/thelinktank) |
| Council of Graduate Students (COGS) Community Building Grant ($300) | 2022 |
| Council of Graduate Students (COGS) Community Building Grant ($120) | 2020 |
| QME Brown Bag, founder | 2018 – 2021 |
| Council of Graduate Students, Educational Psychology student representative | 2018 – 2019 |
| Pi Mu Epsilon Illinois Alpha Chapter, chapter president | [2007](https://pme-math.org/chapter-reports/illinoisalpha-4) – 2008 |
| Pi Mu Epsilon Illinois Alpha Chapter, chapter vice president | 2006 – 2007 |

# Journal Peer Reviews

|  |  |
| --- | --- |
| ZDM – Mathematics Education (1 paper) | 2024 |
| Cognition and Instruction (1 paper) | 2023 |
| Journal of Statistics and Data Science Education (10 papers) | 2021 – present |
| Statistics Education Research Journal (6 papers) | 2021 – present |
| Technology Innovations in Statistics Education (1 paper) | 2021 – present |

# Undergraduate Student Research Assistants / Mentees

|  |  |
| --- | --- |
| Madeline Hunt & Mia Petrie – Building a Modern Assessment for Statistical Literacy | 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 |
| Priyadharshini Sriramlatha & Aparajita Vemuri – The Influence of Personality on 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 – Harnessing GPT Technologies to Develop Students’ Statistical and Computational Thinking | 2024 – 2025 |
| Maisha Ahasan – Teacher-Student Racial Congruency and Students’ Sense of Belonging | 2024 |

# 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](https://cognitivesciencesociety.org/conference-awards/) |
| Quantitative Methods in Education Graduate Student Leadership Award, $100 | [2019](https://news.cehd.umn.edu/students-recognized-at-annual-psych-foundations-and-qme-awards-and-recognition-ceremony-2/) |
| CEHD Graduate Student Fellowship, $25,000 | [2018](https://news.cehd.umn.edu/congratulations-to-educational-psychologys-2018-19-fellowship-and-award-winners/) – 2019 |
| Russell W Burris Memorial Fellowship in Educational Psychology, $5,000 | [2018](https://news.cehd.umn.edu/congratulations-to-educational-psychologys-2018-19-fellowship-and-award-winners/) – 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 |
| *Census2010* Operations Management, US Census Bureau, $500 | 2010 |

# Teaching Experience

|  |  |
| --- | --- |
| **University of Illinois**, Urbana, IL |  |
| STAT 100 – Statistics [Online] (481 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 |