

# V.N. Vimal Rao

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## POSITIONS

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### **University of Illinois at Urbana-Champaign**

Department of Statistics, Champaign, IL

Teaching Assistant Professor

2023 – present

### **George Washington University**

Department of Clinical Research and Leadership, Washington, DC

Adjunct Instructor

Course Director, HSCI 2117

2016 – present

2018 – 2020

### **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

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**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

#### PUBLICATIONS (‡FORMER STUDENT OR MENTEE)

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7. **Rao, V.N.V.**, Bye, J.K., & Varma, S (in press). The psychological reality of the learned “ $p < 0.05$ ” barrier. *Cognitive Research: Principles and Implications*.
6. Simpson, M.‡, & **Rao, V.N.V.** (in press). Association between generational trauma and progressive dementia types. *Minnesota Undergraduate Research & Academic Journal*.
5. 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](https://doi.org/10.1044/2023_JSLHR-22-00713)
4. Running, K., Coddington, 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>
3. **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>
2. 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>
1. **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>

#### PUBLICATIONS UNDER REVIEW (‡FORMER STUDENT OR MENTEE)

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1. Legacy, C., Zieffler, A., **Rao, V.N.V.**, & delMas, R. (under review). Vampires and star-crossed lovers: Secondary teachers’ reasoning about the connections between multivariate data and visualization. *Statistics Education Research Journal*.

#### PUBLICATIONS IN PREPARATION

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3. **Rao, V.N.V.** (in preparation). *How graduate students think about statistical tests*.
2. **Rao, V.N.V.**, Mader, J., & Friedlander, E. (in preparation). *A framework for the design of gender inclusive activities in statistics and quantitative methods courses*.
1. **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](https://osf.io/yf3zh).

## GRANTS AWARDED

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2. Title: An Authentic Introduction to Data and Statistics  
Agency: University of Illinois University Library  
Source: Open Educational Resources Incentive Program  
Role: Project Director  
Award: \$6000  
Project Period: 2024 – 2025
1. Title: Developing Gender Inclusive Activities for Quantitative Methods Courses  
Agency: Association for Psychological Science  
Source: Fund for Teaching and Public Understanding of Psychological Science  
Role: Project Director  
Award: \$5000  
Project Period: 2023 – 2024

## GRANTS SUBMITTED

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1. Title: Harnessing GPT Technologies to Develop Students' Statistical and Computational Thinking  
Agency: University of Illinois Center for Social and Behavioral Sciences  
Source: Small Grant Program  
Role: Principal Investigator  
Award: \$29,450  
Submitted: April 2024  
Decision: Pending

## HONORS, AWARDS, AND FELLOWSHIPS

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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	<a href="#">2021</a>
Quantitative Methods in Education Graduate Student Leadership Award, \$100	<a href="#">2019</a>
CEHD Graduate Student Fellowship, \$25,000	<a href="#">2018 – 2019</a>
Russell W Burris Memorial Fellowship in Educational Psychology, \$5,000	<a href="#">2018 – 2019</a>
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

#### CONFERENCE PROCEEDINGS PAPERS

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4. **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 11<sup>th</sup> International Conference on Teaching Statistics* (pp. 1-6). <https://doi.org/10.52041/iase.icots11.T3C2>.
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>.

#### CONFERENCE PRESENTATIONS (<sup>‡</sup>FORMER STUDENT OR MENTEE)

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18. **Rao, V.N.V.**, Mader, J.<sup>‡</sup>, & Friedlander, E. (2023, July). *A framework for the design of gender inclusive activities* [Paper Presentation]. 13<sup>th</sup> Annual Satellite Conference of the International Association for Statistical Education (IASE), Toronto, Ontario, Canada.
17. May, N.<sup>‡</sup>, & **Rao, V.N.V.** (2023, June). *Cooperative learning in an online asynchronous statistics course: Instructor and student perspectives* [Presentation]. 5<sup>th</sup> Annual University of Minnesota Academic Technology SHAREcase, Minneapolis, Minnesota.
16. **Rao, V.N.V.**, Mader, J.<sup>‡</sup>, & 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.
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.

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.
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.
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).
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]. 12<sup>th</sup> International Research Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-12), online.
8. Torrey-White, K.<sup>‡</sup>, 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, MD.
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.  
 \*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 36<sup>th</sup> 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 36<sup>th</sup> 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), virtual.
2. **Rao, V.N.V.** (2020, November). *A Null Hypothesis Story* [[Lightning Talk](#)]. Fifth Annual Learning Sciences Graduate Student Conference, Madison (LSGSC), Wisconsin.
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.

#### CONFERENCE POSTERS (<sup>‡</sup>FORMER STUDENT OR MENTEE)

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36. Fulsher, A., **Rao, V.N.V.**, & Bhati, M. <sup>‡</sup> (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.
35. **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.
34. Goyal, S. <sup>‡</sup>, 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.
33. Marupudi, V., Goyal, S. <sup>‡</sup>, 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.
32. **Rao, V.N.V.** (2024, June). *Setting the stage for statistics learning* [Poster Presentation]. Electronic Conference on Teaching Statistics (eCOTS), online.
31. **Rao, V.N.V.**, Mader, J. <sup>‡</sup>, & Friedlander, E. (2024, May). *A framework for the design of gender inclusivity activities* [Poster Presentation]. Annual Meeting of the American Psychological Society (APS), San Francisco, CA, USA.
30. **Rao, V.N.V.**, Mader, J. <sup>‡</sup>, & Friedlander, E. (2023, December). *A framework for the design of gender inclusivity activities* [Poster Presentation]. Teaching to Enhance Research Methods & Statistics in Psychology (PsychTERMS) 2023 Virtual Conference, online.



29. **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.
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, PA, USA.
27. Friedlander, E., Mader, J. <sup>‡</sup>, & **Rao, V.N.V.** (2023, June). *Gender Inclusive Activities* [Posters and Beyond Presentation]. United States Conference on Teaching Statistics (USCOTS), State College, PA, USA.
26. **Rao, V.N.V.**, Mader, J. <sup>‡</sup>, & 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.
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, MN, 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, IL, USA.
22. Simpson, M. <sup>‡</sup>, & **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.
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, MN, USA.
20. Ancel, E.E. <sup>‡</sup>, Smith, M.L. <sup>‡</sup>, **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.
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, MN, 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, MN, USA.
17. Ancel, E.E.<sup>‡</sup>, Smith, M.L.<sup>‡</sup>, **Rao, V.N.V.**, & Munson, B. (2021, November). *Does F3-F2 Distance predict transcriptions of preschoolers' /r/ productions?* [Poster Presentation]. 181<sup>st</sup> Meeting of the Acoustical Society of America (ASA), Seattle, WA, 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](#)]. 12<sup>th</sup> 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), San Diego, CA, USA.  
\*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, WA, USA.
13. 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.S. (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., Coddington, 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), Salt Lake City, UT, USA.
9. **Rao, V.N.V.**, Running, K., & Coddington, 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), Salt Lake City, UT, USA.
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), San Francisco, CA, USA.
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, Toronto, Canada.

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, Minneapolis, MN, USA.
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, MN, 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, MN, 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, 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](#)]. United States Conference on Teaching Statistics (USCOTS), State College, PA, USA.

#### CONFERENCE PROCEEDINGS ABSTRACTS

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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](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 42<sup>nd</sup> 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

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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.
7. Zieffler, A., & Catalysts for Change. (2022). *Pensamiento Estadístico: Un Enfoque de Simulación para Modelar la Incertidumbre* (4.3<sup>rd</sup> 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.
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 [sparkezone.com](http://sparkezone.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.
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.
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.

## INVITED TALKS

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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. 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. 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. 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. 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. Sponsored by Dr. Martin Van Boekel.

## WORKSHOPS

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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.

## TEACHING EXPERIENCE

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### University of Illinois, Urbana, IL

Teaching Assistant Professor, Department of Statistics  
STAT 100 – Statistics (4 sections)

2023 – present

### University of Minnesota, Minneapolis, MN

Instructor, Department of Educational Psychology  
EPSY 5261 – Introductory Statistical Methods (6 sections)  
EPSY 3264 – Basic and Applied Statistics (2 section)

2019 – 2022

2021 – 2022

Co-Instructor, Division of Biostatistics

PUBH 6451 – Biostatistics II (Spring 2020)

Teaching Assistant, Department of Educational Psychology

EPSY 3264 – Basic and Applied Statistics (Spring 2021)

EPSY 8264 – Advanced Multiple Regression Analysis (Fall 2020)

EPSY 5261 – Introductory Statistical Methods (3 sections)

2019 – 2021

### George Washington University, Washington, DC

Course Director, Department of Clinical Research and Leadership

HSCI 2117 – Introduction to Statistics for the Health Sciences	2017 – 2020
HSCI 3117 – Principles of Biostatistics for the Health Sciences	2017 – 2021
Instructor, Department of Clinical Research and Leadership	
HSCI 2117 – Introduction to Statistics for the Health Sciences (29 sections)	2016 – 2023
HSCI 3117 – Principles of Biostatistics for the Health Sciences (3 sections)	2017 – 2023
Teaching Assistant, Department of Statistics	
STAT 6210 – Data Analysis (Spring 2012)	
STAT 3187 – Introduction to Sampling (Fall 2011)	
STAT 2112 – Business Statistics II (Spring 2011)	

## OTHER RESEARCH EXPERIENCE

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<b>University of Minnesota</b> , Minneapolis, MN	
Research Assistant, Department of Curriculum and Instruction	
DataX ( <a href="#">NSF #2101413</a> )	2022
Research Assistant, Department of Educational Psychology	
The Data Science WAV ( <a href="#">NSF #1923700</a> )	2020

## SERVICE TO THE FIELD

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

## SERVICE TO THE COMMUNITY

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The Link Tank (UMN), founder	<a href="#">2019 – 2022</a>
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	<a href="#">2007</a> – 2008
Pi Mu Epsilon Illinois Alpha Chapter, chapter vice president	2006 – 2007

## **JOURNAL PEER REVIEWS**

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Cognition and Instruction (1 paper)	2023 – present
Journal of Statistics and Data Science Education (8 papers)	2021 – present
Statistics Education Research Journal (2 papers)	2021 – present
Technology Innovations in Statistics Education (1 paper)	2021 – present

## **UNDERGRADUATE RESEARCH MENTORING AND ADVISING**

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Shubh Goyal – Individuals Differences in Human Clustering	2023
Vishnu Sadhu – Why Do People Purchase Life Insurance?	2023
Priyadharshini Sriramlatha, Aparajita Vemuri – The Influence of Personality on Learning Statistics	2024
Daniel Hogan – Mind Wandering when Learning Statistics	2024
Bhuvan Kala, Julianna Drew, Sanjana Gongati – Computational Thinking with Data	2024