

Michael A. Grubb

July 22, 2026

Department of Psychology & Neuroscience Program

Trinity College

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ACADEMIC POSITIONS

2022 – Associate Professor, Department of Psychology, Trinity College, Hartford CT
2016 – 2022 Assistant Professor, Department of Psychology, Trinity College, Hartford CT
2014 Visiting Assistant Professor, Department of Neural Science, NYU Shanghai

EDUCATION & TRAINING

2013 – 2016 Postdoctoral Research Associate, Center for Neural Science, New York University
• Laboratory for Economics, Psychology, and Neuroscience of Decision Making
• Mentor: Paul Glimcher
2013 Ph.D. Experimental Psychology, New York University
• Cognition & Perception Doctoral Program
• Dissertation Advisors: Marisa Carrasco and David J. Heeger
2012 M.A. Experimental Psychology, New York University
2007 M.A. Global Studies, Sophia University, Tokyo, Japan
2001 B.A. Psychology, The University of Oklahoma

RESEARCH INTERESTS

Impact of reward history and learned associations on attentional control; Temporal dynamics of attention, perception, and decision making; Attention and decision making.

Methods: psychophysics, eye tracking, computational modeling, structural & functional brain imaging

GRANTS & FUNDING

2022-2027 Faculty Early Career Development Award, *National Science Foundation*
• CAREER: Reward learning, selection history, and attentional control
• Award #2141860, Role: PI, Amount: \$469,840
2024-2026 Conference Travel Award, *National Science Foundation*
• Travel: Undergraduate Travel Awards for the Vision Sciences Society Annual Meeting
• Award #2435681, Role: PI, Amount: \$31,740
2019 Research Opportunity Award (ROA), *National Science Foundation*
• ROA supplement to *Decision making under uncertainty across the lifespan: Cognitive, motivational and neural bases* (PI: Dr. Ifat Levy, Yale School of Medicine)
• Award #1928539, Role: Co-Investigator, Amount: \$105,008
2012 Predoctoral Fellowship, *Autism Speaks Scientific Research Grants*, \$57,200
• #7831: Spatial Attention in Autism Spectrum Disorder

AWARDS & HONORS

- 2024 *Outstanding Scholar Award*, Trinity College
- Recognizes completion in the past year of significant scholarship impacting a field or public discourse, highlighting Arts and Humanities, Social Sciences, & STEM
- 2020 *Arthur H. Hughes Award for Teaching Achievement*, Trinity College
- Recognizes excellence in teaching by an early- or mid-career faculty member

PUBLICATIONS (* denotes current or former undergraduate collaborator)

- Volkova*, K., Dowd*, K. & **Grubb, M. A.** (2026). Capabilities and limitations of the Apple Vision Pro as a portable psychophysics tool: Replicating crowding and polar angle asymmetries. *Journal of Vision*, 6(7):13, 1–9.
- Crotty*, N., Doyle*, A., Volkova*, K., Massa*, N. B., Benson, N. & **Grubb, M. A.** (2026). Deep learning and eye tracking: Convolutional neural networks provide converging evidence for experience-driven attention within visual search. *Behavior Research Methods*, 58:187.
- Parrella*, M. A., Gurung*, I., & **Grubb, M.A.** (2025). Luminance matching in cognitive pupillometry is not enough: The curious case of orientation. *eNeuro*, 12(11).
- Doyle*, A., Volkova*, K., Crotty*, N., Massa*, N., & **Grubb, M.A.** (2025). Information-driven attentional capture. *Attention, Perception, and Psychophysics*, 87, 721–727.
- Crotty*, N., Massa*, N., Tellez*, D., White, A. L. & **Grubb, M. A.** (2025). A preliminary investigation of the interaction between expectation and the reflexive allocation of covert spatial attention. *Scientific Reports*, 15:5778.
- Korem, N., Duek, O., Jia, R., Wertheimer, E., Metviner, S., **Grubb, M.A.**, & Levy, I. (2025). Modeling Decision-Making Under Uncertainty with Qualitative Outcomes. *PLoS Comput Biol*, 21(3): e1012440.
- Massa*, N. B., Crotty*, N., Levy, I., & **Grubb, M. A.** (2024). Manipulating the reliability of target-color information modulates value-driven attentional capture. *Attention, Perception, & Psychophysics*, 86:1108-1119.
- Jach, H. K., Cools, R., Frisvold, A., **Grubb, M. A.**, Hartley, C. A., Hartmann, J., ... & Gottlieb, J. (2024). Individual differences in information demand have a low dimensional structure predicted by some curiosity traits. *Proceedings of the National Academy of Sciences*. 121(45), e2415236121.
- Grubb, M. A.**, Li, Y., Larisch, R., Hartmann, J., Gottlieb, J., & Levy, I. (2023). The composition of the choice set modulates probability weighting in risky decisions. *Cognitive, Affective, & Behavioral Neuroscience*, 23:604–615.
- Raio, C. M., Lu, B. B., **Grubb, M.**, Shields, G. S., Slavich, G. M., & Glimcher, P. (2022). Cumulative lifetime stressor exposure assessed by the STRAIN predicts economic ambiguity aversion. *Nature Communications*, 13(1), 1-11.
- Massa*, N. B., Deck*, J. & **Grubb, M. A.** (2021). Perceptual Fading of a Stabilized Cortical Image: Replication in the Undergraduate Classroom. *eNeuro*, 8(5), 1-8.
- Butler*, D. R. & **Grubb, M. A.** (2020). Sudden onsets reflexively drive spatial attention, but those that predict reward do more. *Journal of Vision*, 20(7):30, 1-10.
- Gannon*, E. T. & **Grubb, M. A.** (2020). How Filmmakers Guide The Eye: The Effect of Average Shot Length on Intersubject Attentional Synchrony. *Psychology of Aesthetics, Creativity, and the Arts*, 16(1), 125.
- Grubb, M. A.**, Christensen*, G., & Albanese*, J. (2019). Investigating the role of exogenous cueing on selection history formation. *Psychonomic Bulletin & Review*, 26:1282–1288.

- Grubb, M. A.**, & Li*, Y. (2018). Assessing the role of accuracy-based feedback in value-driven attentional capture. *Attention, Perception, and Psychophysics*, 80: 822-828.
- Grubb, M. A.**, Tymula, A., Gilaie-Dotan, S., Glimcher, P., & Levy, I. (2016). Neuroanatomy Accounts for Age-Related Changes in Risk Preferences. *Nature Communications*, 7, 13822: 1-5.
- Grubb, M. A.**, White, A., Heeger, D., & Carrasco, M. (2015). Interactions between Voluntary and Involuntary Attention Modulate the Quality and Temporal Dynamics of Visual Processing. *Psychonomic Bulletin & Review*, 22(2): 437-444.
- Grubb, M. A.**, Behrmann, M., Egan, R., Minshew, N. J., Heeger, D. J., & Carrasco, M. (2013). Exogenous Spatial Attention: Evidence for Intact Functioning in Adults With Autism Spectrum Disorder. *Journal of Vision*, 13(14): 9, 1–13.
- Grubb, M. A.**, Behrmann, M., Egan, R., Minshew, N.J., Carrasco, M. & Heeger, D.J. (2013). Endogenous Spatial Attention: Evidence for Intact Functioning in Adults With Autism. *Autism Research*, 6: 108–118.

IN PROGRESS (* denotes current or former undergraduate collaborator)

- Doyle*, A., Gonzales*, E., Hu*, L., & **Grubb, M. A.** (accepted pending data collection). From providing to predicting: expanding the information-driven attentional capture hypothesis. Registered Report at *Attention, Perception, and Psychophysics*.

INVITED TALKS

- Grubb, M.A. *Reflexive spatial attention dynamically adapts to task structure and trial timing*. Talk presented at the Canonical Neural Computations for Vision, Attention and Working Memory workshop, Park City, UT, November 14, 2025.
- Grubb, M.A. *Exogenous Spatial Attention and Expectation: Psychophysical Effects and Pupillometric Dynamics*. Talk presented at the Pisa Vision Laboratory, Pisa, Italy, October 13, 2025.
- Grubb, M. A. *Expectation modulates the reflexive allocation of covert spatial attention*. Talk presented at the Laboratory of Brain and Cognition Lab Meeting (NIH/NIMH), Bethesda, MD, March 8, 2024.
- Grubb, M. A. *Made You Look: Attention, Perception, and Your Lived Experience*. The Shirley G. Wassong Memorial Lecture in European and American Art, Culture, and History. Trinity College, April 24, 2023.
- Grubb, M. A. *On the Varieties of Visual Attention*. Talk presented at the Sloan Nomis Workshop on the Cognitive Foundations of Economic Behavior, Vitznau, Switzerland, July 5, 2019.

CONFERENCE PRESENTATIONS (* denotes current or former undergraduate collaborator)

- Hu, L*, Doyle*, A., Gonzales*, E., & **Grubb, M. A.** *Learned associations between color and information prediction in the training phase of an experience-driven attentional capture experiment*. Poster presented at the Vision Sciences Society Annual Meeting, May 17, 2026.
- Doyle*, A., Gonzales*, E., & **Grubb, M. A.** *From providing to predicting: expanding the information-driven attentional capture hypothesis*. Poster presented at the Object Perception, Visual Attention, and Visual Memory Annual Meeting, November 20, 2025.
- Volkova*, K., Dowd*, K. & **Grubb, M. A.** *Using the Apple Vision Pro as a Portable Research Tool*. Poster presented at the Object Perception, Visual Attention, and Visual Memory Annual Meeting, November 20, 2025.
- Crotty*, N. & **Grubb, M. A.** *Implementing the speed-accuracy tradeoff online: a replication and extension*. Poster presented at the Society for Neuroscience Annual Meeting, November 16, 2025.

- Trowbridge, S., Vegas*, O., Lopez-Guzman, S., & **Grubb, M. A.** *Attending and introspecting: a computational measure of metacognitive ability relates to attentional control*. Poster presented at the Society for Neuroscience Annual Meeting, November 15, 2025.
- **Grubb, M.A.** and Crotty*, N. *Reflexive spatial attention dynamically adapts to task structure and trial timing*. Talk presented at the European Conference on Visual Perception, Mainz, Germany, August 26, 2025.
- Dowd*, K., Volkova*, K., & **Grubb, M. A.** *Portable Psychophysics: Measuring Visual Crowding with the Apple Vision Pro*. Poster presented at the Vision Sciences Society Annual Meeting, May 20, 2025.
- Trowbridge, S., Vegas*, O., Lopez-Guzman, S., & **Grubb, M. A.** (2025). *Metacognitive ability limits visual attentional control*. Poster presented at the Vision Sciences Society Annual Meeting, May 20, 2025.
- Vegas*, O., Trowbridge, S., Lopez-Guzman, S., & **Grubb, M. A.** (2025). *Metacognitive Practice Induces Conservative Response Biases*. Poster presented at the Vision Sciences Society Annual Meeting, May 20, 2025.
- Parrella*, M., Gurung*, I., & **Grubb, M. A.** *Luminance-matching in pupillometry is not enough: The curious case of orientation*. Poster presented at the Vision Sciences Society Annual Meeting, May 20, 2025.
- Doyle*, A., Volkova*, K., Crotty*, N., Massa*, N. B., & **Grubb, M. A.** *Information-driven attentional capture*. Poster presented at the Object Perception, Visual Attention, and Visual Memory Annual Meeting, November 21, 2024.
- Parrella*, M., Gurung*, I., & **Grubb, M. A.** *The predictive pupil: Implicitly signaling the prior probability of an attention-attracting abrupt onset preemptively modulates pupil area*. Poster presented at the Object Perception, Visual Attention, and Visual Memory Meeting, November 21, 2024.
- Crotty*, N., Massa*, N. B., Benson, N. & **Grubb, M. A.** *Deep learning and eye tracking: Analyzing visual search data with convolutional neural networks*. Poster presented at the Society for Neuroscience Annual Meeting, October 8, 2024.
- Crotty*, N., Massa*, N. B., & **Grubb, M. A.** (2024). *Deep learning and visual search: Using raw eye data, convolutional neural networks generate target-location predictions in line with experimental manipulations*. Poster presented at the Vision Sciences Society Annual Meeting, May 22, 2024.
- Gurung*, I., Parrella*, M., Crotty*, N., & **Grubb, M. A.** (2024). *Deep learning and the allocation of covert exogenous spatial attention*. Poster at the Vision Sciences Society Annual Meeting, May 21, 2024.
- Doyle*, A., Volkova*, K., Crotty*, N., Massa*, N. B., & **Grubb, M. A.** (2024). *Information reliability modulates experience-driven attention*. Poster presented at the Vision Sciences Society Annual Meeting, May 18, 2024.
- **Grubb, M. A.**, Crotty*, N., Massa*, N., Tellez*, D. & White, A. L. *Expectation modulates the reflexive allocation of covert spatial attention*. Talk presented at the Vision Sciences Society Annual Meeting, May 24, 2023.
- Crotty*, N., Massa*, N., Tellez*, D., White, A. L. & **Grubb, M. A.** *Attention and expectation jointly modulate the temporal dynamics of visual processing*. Poster presented at the Vision Sciences Society Annual Meeting, May 20, 2023.
- Massa*, N., Crotty*, N., Levy, I. L. & **Grubb, M. A.** *Manipulating uncertainty in value-driven attentional capture*. Poster presented at the Vision Sciences Society Annual Meeting, May 22, 2023.
- **Grubb, M. A.**, White, A. L., Massa*, N. & Crotty*, N. *Prediction errors transiently modulate visual processing resources*. Poster presented at the Vision Sciences Society Annual Meeting, May 15, 2022.

- Albanese*, J., Bernewitz*, E. & **Grubb, M. A.** *Learned but not distracting: low-value stimuli and value-driven attentional capture*. Poster presented at the Vision Sciences Society Annual Meeting, Virtual, May 25, 2021.
- **Grubb, M. A.**, Francis*, J., Leguizamon*, R., Miller*, J. & Wang*, K. *The Decisional Blink? Response criterion and the attentional blink paradigm*. Poster presented at the Vision Sciences Society Annual Meeting, Virtual, May 23, 2021.
- **Grubb, M. A.** & Butler*, D. R. *Sudden onsets reflexively drive spatial attention, but those that predict reward do more*. Accepted as a talk at the Vision Sciences Society Annual Meeting, St. Pete's Beach, FL, 2020, not presented due to Covid-19.
- **Grubb, M. A.**, Li, Y., Larisch, R. & Levy, I. *Prolonged attention to probability reduces probability weighting in risky choice*. Poster presented at the Society for NeuroEconomics Annual Meeting, Dublin, Ireland, October 4, 2019.
- **Grubb, M. A.**, Christensen*, G., & Albanese*, J. *Does a history of involuntary selection generate attentional biases?* Poster presented at the Vision Sciences Society Annual Meeting, St. Pete's Beach, FL, May 21, 2019.
- **Grubb, M. A.**, & Butler*, D. *Associative learning accelerates the temporal dynamics of covert exogenous spatial attention*. Poster presented at the Vision Sciences Society Annual Meeting, St. Pete's Beach, FL, May 23, 2018.
- **Grubb, M. A.**, & Li*, Y. *Performance-contingent reward training modulates reaction time variability, even in the absence of previously rewarded stimuli*. Poster presented at the Vision Sciences Society Annual Meeting, St. Pete's Beach, FL, May 21, 2017.
- **Grubb, M. A.**, Glimcher, P., & Levy, I. (2016). *Neuroanatomy accounts for age-related changes in risk preferences*. Talk presented at the Society for Neuroscience annual meeting, San Diego, CA.
- **Grubb, M. A.**, Rashid, S., Glimcher, P., & Levy, I. (2015). *Neural representations of subjective value across the human lifespan*. Poster presented at the Society for Neuroeconomics annual meeting, Miami, FL and at the Society for Neuroscience annual meeting, Chicago, IL.
- **Grubb, M. A.** & Glimcher, P. (2014). *Preferences under pressure: limited processing time increases risk aversion during monetary decision making*. Poster presented at the Society for Neuroeconomics annual meeting, Miami, FL.
- **Grubb, M. A.**, White, A., Heeger, D. J., & Carrasco, M. (2013). *Does exogenous attention modulate endogenous attention?* Talk presented at the Vision Sciences Society annual meeting, Naples, FL.
- **Grubb, M. A.**, Behrmann, M., Egan, R., Minshew, N., Carrasco, M., & Heeger, D. J. (2013). *Endogenous Spatial Attention: Evidence for Intact Functioning in Adults With Autism*. Poster presented at the International Meeting for Autism Research, San Sebastian, Spain.
- **Grubb, M. A.**, Wallisch, P., Hasson, U., & Heeger, D. J. (2012). *A neural signature of covert disengagement during movie viewing*. Talk presented at the Cognitive Neuroscience Society annual meeting, Chicago, IL.
- **Grubb, M. A.**, Heeger, D. J., Hasson, U., & Wallisch, P. (2010). *Subjective preference and its effect on the reliability of cortical activity during movie viewing*. Poster presented at the Society for Neuroscience annual meeting, San Diego, CA.

COURSES DEVELOPED and TAUGHT at TRINITY COLLEGE (S: spring, F: fall, W: winter)

- Psychology (PSYC) 293, *Perception*, S17, S18, S19, F19, S21 (x2), S22, S23, F24, S26
 - With a simple opening of the eyes, a vividly colorful, object-filled world effortlessly appears before you. With remarkable ease, you recognize individual voices or unique melodies. And without even trying, you know immediately if you have over salted your food. But how does all of this happen? This foundational course will provide an introduction to our current scientific understanding of the psychology and neuroscience of perception.
- PSYC 293-20, *Lab in Perception*, S17, S18, S19, F19, S21, S22, S23, F24, S26
 - The perception laboratory provides students with an opportunity to experience and manipulate perceptual effects, to learn necessary concepts and basic methodology. Students will learn how to manipulate computer graphics to make displays, design and execute psychophysical procedures, analyze psychophysical data, and write experimental reports.
- PSYC 348, *Focusing the Mind: The Psychology of Attention*, F17, F18, F19, F20, F21, F22
 - More than 100 years ago, William James famously declared, "Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought." And while James' conception of attention resonates with a colloquial understanding of the term that's still in use today, empirical treatment of attention in the psychological and neuroscientific literature suggests that consensus on what attention is and what attention does has not yet been reached. Using primary sources, scholarly reviews, and popular science pieces, we will work toward a more nuanced understanding of what attention is and delve deeply into what it means to selectively focus the mind in a world full of distraction.
- PSYC/NESC 349, *Focusing the Mind: The Psychology of Attention with Experiential Lab*, S25, F25
 - More than 100 years ago, William James famously declared, "Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought." And while James' conception of attention resonates with a colloquial understanding of the term that's still in use today, empirical treatment of attention in the psychological and neuroscientific literature suggests that consensus on what attention is and what attention does has not yet been reached. Using primary sources, scholarly reviews, and popular science pieces, we will work toward a more nuanced understanding of what attention is and delve deeply into what it means to selectively focus the mind in a world full of distraction. With support from an NSF-funded research grant, this course contains an experiential laboratory component in which students will gain first-hand experience with behavioral methods used to study attention.
- PSYC 101, *Introduction to Psychology*, F16, F17, F18, S19
 - An introduction to the basic concepts in psychology with primary emphasis on the study of human behavior. Topics will include motivation, learning, emotion, perception, intelligence, memory, personality, child development, mental illness, and social interaction. Students will be introduced to issues in research techniques by either being involved in on-going faculty research or writing a short paper based on research articles.
- PSYC 401, *Senior Seminar: The Psychology of Psychedelic Drugs*, W21, F21, F22
 - Psychoactive substances like LSD, mescaline, and psilocybin exert strong effects on the central nervous system, inducing altered states of conscious experience. In this seminar, we will explore psychedelics from a number of different psychological perspectives. We will examine their mechanisms of action in the brain, probe the resultant impact on perception and cognition, assess the social impact of psychedelics, and discuss their use at different developmental stages of the human

lifespan. We will also pay particular attention to a renewed clinical interest in using psychedelics to treat psychological disorders. In addition to writings, podcasts, and multimedia created for a general audience, course content will be heavily drawn from the relevant neuroscience and psychological literatures.

- First-year Seminar (FYSM) 165, *The Emerging Science of Consciousness*, F20, W22 (as PSYC 243)
 - From the early pioneers of experimental psychology to modern day cognitive neuroscientists, we have learned a tremendous amount about the role that the brain plays in conscious experience. A rich literature on the philosophy of mind also continues to inform and refine our thinking on what consciousness is and how we might study it. However, there is much we still don't know, especially in regards to how physical activity in your nervous system gives rise to the kinds of subjective experiences that constitute your waking (and dreaming) life. Through a variety of academic and popular books, articles, and podcasts, this seminar will introduce you to, and ask you to grapple with, foundational (and often unresolved) issues in the scientific study of consciousness.
- ROME 105, *Exploring the Science of Awe: Rome as a natural laboratory*, W25, W26
 - The psychological literature defines awe as an emotional response to physical or conceptual vastness. It's an expansive feeling that challenges you to see the world differently and to connect with something larger than yourself. In this course, we will build a theoretical understanding of awe, as conceptualized in the psychological, neuroscientific, and philosophical literature, while using Rome—a city rich with history, art, and human achievement—as a natural laboratory for finding and exploring the phenomenology of awe.

SERVICE

- Acting Chair, Department of Psychology, Trinity College, Spring 2023
- Faculty Research Committee, Trinity College, 2021-2023 (Chair, 2022-2023)
- Curriculum Committee, Trinity College, 2018-2021, 2024-2027 (Chair, 2025-2026)
- *ad hoc* peer reviewer for *Journal of Vision*, *Attention Perception & Psychophysics*, *Psychology & Neuroscience*, *British Journal of Psychology*, *Neuroimage*, *Cognition*, *Scientific Reports*, *eNeuro*, *Motivation and Emotion*, *eLife*, *Communications Biology*, *Social Cognitive and Affective Neuroscience*, *Journal of Experimental Psychology: Human Perception and Performance*, *Psychological Science*, *Cognitive, Affective, & Behavioral Neuroscience*, *PLOS One*, *Journal of Experimental Psychology: General*, *iScience*, *Psychonomic Bulletin & Review*, *Stress and Health*, *Visual Cognition*
- NSF Reviewer, 2021, 2023
- Advisory group to the Vision Sciences Society Diversity and Inclusion Committee, 2021-2024
- Co-founder and organizer, Visibility (a gathering of LGBTQ+ vision scientists and friends at VSS)