

SHARON GILAD-GUTNICK, PhD

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Dept. of Brain and Cognitive Science, 46-4089
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I am fascinated by the mechanistic underpinnings of visual processing, their development, and the role of early versus delayed visual experience for plasticity and skill acquisition. I work closely with visually impaired children to make impactful scientific contributions to the nascent field of data-driven rehabilitation and educational intervention. My work at MIT, together with the years spent doing longitudinal field work in India, has shaped me as a researcher, and impressed upon me the importance of science that extends beyond the boundaries of the laboratory.

EMPLOYMENT

STAFF RESEARCH SCIENTIST

Dept. of Brain & Cognitive Sciences, MIT | Cambridge MA

2018 – PRESENT

BUSINESS DEVELOPMENT AND GROWTH CONSULTANT

Testable Research Inc. | London UK

2022 –2023

RESEARCH SCIENTIST CONSULTANT

Perceptive Automata Inc. | Boston, MA

2019

POSTDOCTORAL FELLOW

Dept. of Brain & Cognitive Sciences, MIT | Cambridge MA
Faculty Advisor: Prof. Pawan Sinha

2014 –2018

EDUCATION

PH.D. IN NEUROSCIENCE

School of Psychological Sciences, Tel-Aviv University | Tel-Aviv, Israel

MAY 2014

Advisors: Prof. Galit Yovel and Prof. Pawan Sinha

M.SC. IN LIFE SCIENCES

Depts. of Life Science & Applied Mathematics, Weizmann Institute of Science / Rehovot, Israel

JAN 2007

Advisor: Prof. Shimon Ullman

B.SC (MAGNA CUM LAUDE)

Computational Neuroscience, University of Massachusetts / Amherst, MA

MAY 2007

Advisor: Prof. Pawan Sinha (Honors thesis completed at MIT)

AWARDS AND HONORS

- 2021 CNS Postdoctoral Fellows Award

- 2019 NEI Early Career Scientist Travel Grant
- 2019 MIT SPOT award
- Co-wrote successful R01 research grant (R01 EY020517)
- Professional memberships (past and present): Vision Science Society (VSS), American Association for the Advancement of Science (AAAS), Association for Research in Vision and Ophthalmology (ARVO), Females of Vision et al. (FoVea), Women in Cognitive Science (WiSC), Cognitive Neuroscience Society (CNS), Network for Women in Neuroscience, American Psychological Association (APA), partnering with Federation of Association in Behavioral and Brain Science (FABBS)
- Bachelor's Degree with Individual Concentration Research Award
- Undergraduate Honors Thesis
- Commonwealth College High Honors, Magna Cum Laude
- Dean's list for multiple semesters (UMass Amherst)

FUNDING

Supported by National Institute of Health R01EY020517 (co-written with Prof. Pawan Sinha)

PUBLICATIONS

PEER REVIEWED

Vogelsang, L., Vogelsang, M., Gupta, P., Gandhi, T., Shah, P., Swami, P., **Gilad-Gutnick, S.**, Ben-Ami, S., Diamond, S., Ganesh, S., Sinha, P. (2023). Impact of early visual experience on later usage of color cues. (*revision under consideration*).

Gilad-Gutnick, S., Kurian, G.S., Gupta, P., Shah, P., Tiwari, K., Ralekar, C., Gandhi, T., Ganesh, S., Umang, M. and Sinha, P. (2023). Facial expression recognition following treatment for blindness since birth: Motion's privilege. (*revision under consideration*).

Gilad-Gutnick, S., Hu, F., Dalrymple, K., Gupta, P., Shah, P., Ralekar, C., Verma, D., Tiwari, K., Swami, P., Ganesh, S., Umang, M. and Sinha, P. (2023). Face-specific identification impairments following sight-providing treatment may be alleviated by an initial period of low visual acuity. (*revision under consideration**).

* Invited contribution to special collection on face perception

Gupta, P., Vogelsang, M., Vogelsang, L., Shah, P., **Gilad-Gutnick, S.**, and Sinha, P. (2023). The influence of semantics on long-term visual memory capacity in children and adults. *British Journal of Developmental Psychology* (*revision under consideration*).

Gilad-Gutnick, S., (2023). Merging Basic Science and Societal Service in Vision Research. *Policy Insights from Behavioral and Brain Sciences*, 10(2), 287-295.

<https://doi.org/10.1177/23727322231196867>

* Invited contribution for special issue on policy insights from vision science.

Jang, H., Zaidi, S. S. A., Boix, X., Prasad, N., **Gilad-Gutnick, S.**, Ben-Ami, S., & Sinha, P. (2023). Robustness to Transformations Across Categories: Is Robustness Driven by Invariant Neural Representations? *Neural Computation*, 1-28.

https://doi.org/10.1162/neco_a_01621

Pedersini, C.A., Miller, N.P., Gandhi, T., **Gilad-Gutnick, S.**, Mahajan, V., Sinha, P., Rokers, B., (2023). White Matter Plasticity Following Cataract Surgery in Congenitally Blind Patients. *Proceedings of the National*

Academy of Sciences, 120(19) e2207025120.
<https://doi.org/10.1073/pnas.2207025120>.

Jarudi, I.N., Braun, A., Vogelsang, M., Vogelsang, L., **Gilad-Gutnick, S.**, Bosch, X.B., Dixon III, W.V., Sinha, P., (2023) Recognizing distant faces. *Vision Research*. 205, 108184.
<https://doi.org/10.1016/j.visres.2023.108184>.

Gupta, P., Shah, P., Swochchandra, S., **Gilad-Gutnick, S.**, Ganesh, S., Gandhi, T. and Sinha, P. (2022). Vulnerability of facial attractiveness perception to early and multi-year visual deprivation. *Developmental science*, 26(1), e13258. <https://doi.org/10.1111/desc.13258>.

Gupta, P., Shah, P., **Gilad-Gutnick, S.**, Vogelsang, M., Vogelsang, L., Tiwari, K., Gandhi, T., Ganesh, S. and Sinha, P. (2021). Development of visual memory capacity following early-onset and extended blindness. *Psychological Science*, 33(6), 847–858. <https://doi.org/10.1177/09567976211056664>.

Unell, A., Eisenstat, Z. M., Braun, A., Gandhi, A., **Gilad-Gutnick, S.***, Ben-Ami, S. and Sinha, P. (2021). Influence of visual feedback persistence on visuo-motor skill improvement. *Scientific Reports*, 11: 17347.
<https://doi.org/10.1038/s41598-021-96876-6>.

*Corresponding author

Vogelsang, L.*, **Gilad-Gutnick, S***, Diamond, S., Yonas, A. and Sinha, P. (2019). Response to Katzhendler and Weinshall: Initial visual degradation during development may be adaptive. *Proceedings of the National Academy of Sciences*, 116 (38) 18767-18768. <https://doi.org/10.1073/pnas.1910674116>.

*Equally contributing first-authors

Vogelsang, L.*, **Gilad-Gutnick, S***, Ehrenberg, E., Yonas, A., Diamond, S., Held, R. and Sinha, P. (2018). Potential downside of high initial visual acuity. *Proceedings of the National Academy of Sciences*, 115 (44) 11333-11338. <https://doi.org/10.1073/pnas.1800901115>.

*Equally contributing first-authors

Gilad-Gutnick, S., Harmatz, E. S., Tsourides, K., Yovel, G., & Sinha, P. (2018). Recognizing Facial Slivers. *Journal of cognitive neuroscience*, 30 (7) 951-962. https://doi.org/10.1162/jocn_a_01265.

Gilad-Gutnick, S. and Sinha, P. (2017). The Presidential Illusion. *Compendium of Visual Illusions*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199794607.003.0090>.

Gilad-Gutnick, S., Varma, R. and Sinha, P. (2017). The Bogart Illusion. *Compendium of Visual Illusions*. Oxford University Press.

Gilad-Gutnick, S., Yovel, G. and Sinha, P. (2012). Recognizing degraded faces: The contribution of configural and featural cues. *Perception*, 41 (12) 1497-1511. <https://doi.org/10.1068/p7064>.

Gilad, S., Meng, M. and Sinha, P. (2009). Role of ordinal contrast relationships in face encoding. *Proceedings of the National Academy of Sciences*. 106 (13) 5353-5358. <https://doi.org/10.1073/pnas.0812396106>.

Riesenhuber, M., Jarudi, I., **Gilad, S.** and Sinha, P. (2004). Face processing in humans is compatible with a simple shape-based model of vision. *Proceedings of the Royal Society Biology Letters*. 271 (6) 448-450.
<https://doi.org/10.1098/rsbl.2004.0216>.

PREPRINTS

Gilad-Gutnick, S., and Breznitz, Z. (2022). Perception of Linguistic and Non-linguistic Visual Stimuli Among Dyslexic and Non-dyslexic Readers. *PsyArXiv*. February 1. psyarxiv.com/876yt.

Zaidi, S.S.A., Boix, X., Prasad, N., **Gilad-Gutnick, S.**, Ben-Ami, S. and Sinha, P., (2020). Is Robustness to Transformations Driven by Invariant Neural Representations? *arXiv preprint, arXiv:2007.00112*.

WORKING PAPERS

Gilad-Gutnick, S., Tang, S., Sander, J., Wu, K., Shah, P., Gupta, P., Shukla, V., Tiwari, K. and Sinha, P. (*Manuscript in Prep*). Drawing from the mind's eye: The development of representational drawing in sight restored children is limited by critical periods.

Gilad-Gutnick, S., Sander, J., Wu, K., Shah, P., Gupta, P., Shukla, V., Tiwari, K. and Sinha, P. (*Manuscript in Prep*). Can you copy what you see? Disentangling the relative roles of vision versus visual experience for developing copying skills following late treatment for congenital blindness.

Striem-Amit, E., Ganhi, T., Ben-Ami, S., **Gilad-Gutnick, S.** and Sinha, P. (*Manuscript in Prep*). Visual network reorganization following sight-restoration relates to acuity gain.

Raja, S., **Gilad-Gutnick, S.**, Ben-Ami, S., Gupta, P., Shah, P., Ganesh, S. and Sinha, P. (*Submission Ready*). Global motion perception in children treated for early-onset blindness.

Gilad-Gutnick, S., Hong, B.W., Ullman, S. (*Submission Ready*). Feature selection for subordinate face classification.

CONFERENCES AND WORKSHOPS

Gilad-Gutnick, S., Shah, P., Gupta, P., Yadav, M., Ralekar, C., Verma, D., Mathur, U., Ganesh, S., and Sinha, P. (2023). Youth is not wasted on the young: Late-in-life sight restoration in congenitally blind children leads to the emergence of some visual constructional skills but not others. *Annual meeting of the Vision Science Society*, St. Pete, FL.

Ralekar, C., Gupta, S., Gandhi, T.K., **Gilad-Gutnick, S.**, Verma, D., Gupta, P., Ganesh, S., Mathur, U., and Sinha, P. (2023). Development of Electrophysiological Correlates of Face/non-face Distinction in Children with Late Sight Onset. *Annual meeting of the Vision Science Society*, St. Pete, FL.

Verma, D., Yadav, M., Gupta, S., Ralekar, Ben-Ami, S., **Gilad-Gutnick, S.**, Riskin, S., Phillips, F., Jazayeri, K., Ganesh, S., and Sinha, P. (2023). Social Attribution Behavior in Newly Sighted Children. *Annual meeting of the Vision Science Society*, St. Pete, FL.

Gilad-Gutnick, S., Musser, A., Groth, M., Fux, M., Shah, P., Gupta, P. and Sinha, P. (2022). Drawing in the mind's eye: Developing targeted routines for assessing and enhancing visual 'learning through drawing' following treatment for congenital blindness. *Annual meeting of the Vision Science Society*, St. Pete, FL.

* Talk

Gilad-Gutnick, S., Musser, A., Groth, M., Fux, M., Shah, P., Gupta, P. and Sinha, P. (2022). Drawing from the mind's eye: the development of drawing in sight restored children. *Annual meeting of the Psychonomics Society*, Boston, MA.

Gilad-Gutnick, S., Wu, K., Sanders, J., Shah, P., Gupta, P. and Sinha, P. (2021). Drawing from the mind's eye: the development of drawing in sight restored children. *Annual meeting of the Vision Science Society*, St. Pete, FL.

Gilad-Gutnick, S., Kurian, G.S., Gupta, P., Shah, P., Tiwari, K., Gandhi, T., Ganesh, S., Umang, M. and Sinha, P. (2021). Facial expression recognition following treatment for blindness since birth: Motion's privilege. *Cognitive Neuroscience Society Annual Meeting, Virtual*.

Gilad-Gutnick, S., Wu, K., Sander, J., Shah, P., Gupta, P. & Sinha, P. (2020). Drawing as a window into visual learning and plasticity following treatment for congenital bilateral blindness. *Cognitive Neuroscience Society Annual Meeting, Virtual.*

Gilad-Gutnick, S., Kurian, G., Gupta, P., ... & Sinha, P. (2019). Development of facial expression recognition following extended blindness: The importance of motion. *Annual meeting of the Vision Science Society, St. Pete, FL.*

Sinha, P., Diamond, S.P., Thorn, F., **Gilad-Gutnick, S.,** Ben-Ami, S., Raja, S. (2019). Temporal consequences of spatial acuity reduction. *Annual meeting of the Vision Science Society, St. Pete, FL.*

Raja, S., **Gilad-Gutnick, S.,** Ben-Ami, S., ... & Sinha, P. (2019). Characterizing global motion perception following treatment for congenital bilateral cataracts. *Annual meeting of the Vision Science Society, St. Pete, FL.*

Gilad-Gutnick, S. (2018). Workshop on Multimodal Face Perception, Center for Cognitive Neuroscience, Dartmouth, N.H.

*Co-organized and Chaired

Gilad-Gutnick, S., Vogelsang, L., Ehrenberg, E., Yonas, A., Diamond, S., Held, R. and Sinha, P. (2018). From understanding human development to creating “smarter” machines. *MIT Intelligence Quest Launch, Cambridge, MA.*

Vogelsang, L., **Gilad-Gutnick, S.,** Ehrenberg, E., & Sinha, P. (2017). From understanding human visual development to improving CNNs. *ECVP, Berlin, Germany.*

Gilad-Gutnick, S., Ehrenberg, E., Vogelsang, L. and Sinha, P. (2017). Potential downside of high initial visual acuity. *ECVP, Berlin, Germany.*

*Talk, invited to chair session

Ozkan, H., **Gilad-Gutnick, S.,** Ehrenberg, E. and Sinha, P. (2017). Neural correlates of dynamic face perception. *Journal of Vision, 17(10), 266-266.*

Vogelsang, L., Ehrenberg, E., **Gilad-Gutnick, S.,** & Sinha, P. (2017). How does poor initial acuity impact visual development? A computational investigation. *Journal of Vision, 17(10), 1105-1105.*

Gilad-Gutnick, S., Ehrenberg, E., Diamond, S., Held, R., Kalia, A., Gandhi, T., ... & Sinha, P. (2016). A possible account of impairments in configural face processing following early visual deprivation. *Annual meeting of the Vision Science Society, Naples, FL.*

*Talk

Gilad-Gutnick, S., Cardinaux, A., Denna, L., Jamal, W., Kjelgaard, M. and Sinha, P. (2015). Can blindness cause autism? *The Fourth Annual Simons Center Autism Poster Session, Cambridge, MA.*

Gilad-Gutnick, S., Harmatz, E. S., Yovel, G., Tsourides K. and Sinha, P. (2013). Recognizing Facial Slivers. *Annual meeting of the Vision Sciences Society, Naples, FL.*

Gilad-Gutnick, S., Harmatz, E. S., Yovel, G. and Sinha, P. (2012). Recognizing Facial Slivers. *Symposium on Brain Plasticity, Tel-Aviv, Israel.*

Gilad-Gutnick, S., Harmatz, E. S., Yovel, G. and Sinha, P. (2011). Recognizing Facial Slivers. *20th Annual Meeting of the Israeli Society for Neuroscience, Eilat, Israel.*

*Talk

Gilad-Gutnick, S., Harmatz, E. S., Yovel, G. and Sinha, P. (2011). Recognizing Facial Slivers. *Annual meeting of the Vision Sciences Society*, Sarasota, FL.

Sinha, P. and **Gilad, S.** (2004). Face recognition with contrast chimeras. *Annual meeting of the Vision Sciences Society*, Sarasota, FL.

INVITED TALKS

Construction skill acquisition in children with late-onset visual experience. 2024
Multisensory Perception and Plasticity Seminar (scheduled for February 2024)

Vision Unveiled: Understanding Face Perception in Children Treated for Congenital Blindness. 2023
<https://www.youtube.com/watch?v=kjyEwRF98VI>
BIU Vision Science Seminar.

Visual plasticity beyond critical periods. 2022
Ophthalmology Society of Uganda Annual Scientific Congress.
* Keynote in Pediatric Cataract Session.

The boy who mistook his friend for a bottle: Face perception after sight restoration. 2019
VSS @ ARVO Special Workshop: Vision After Sight Restoration, Vancouver, BC.

Invariant face identification. 2019
Perceptive Automata, Somerville, MA.

Co-design for children recovering from early-onset blindness. 2019
Introduction to Disabilities and Assistive Technologies, Dept. of Mech. Eng., MIT, Cambridge, MA

From a blooming buzzing confusion to an organized sensorium 2018
MIT workshop for visiting scholars, Dept. of Mechanical Engineering, MIT, Cambridge, MA

Mechanisms of face perception 2015
Seminar on experimental research methods, Dept. of Brain and Cog. Sci., MIT, Cambridge, MA

Psychophysics and signal detection theory 2014
Undergraduate course on research methods, Dept. of Brain and Cog. Sci., MIT, Cambridge, MA

MEDIA

[MIT BCS Interview](#)

[MIT BCS News feature: The gift of light, through science and service](#)

[Engadget: "The fight against childhood blindness could lead to eagle-eyed robots."](#)

[American Academy of Ophthalmology: "Blurry baby vision bolsters brain development"](#)

[Discover Magazine: "We're good at recognizing faces."](#)

MENTORING

RESEARCH ASSOCIATES

Sruti Raja 2017 – 2019 (Research Assistant)
Priti Gupta 2016 – present (Postdoc at IIT-Delhi)
Pragya Shah 2018 – 2020 (Research coordinator)
Anna Musser 2021 – 2023 (Research Associate)
Mathew Groth 2021 – 2022 (Research Associate)
Dhun Verma 2022 – present (Research Associate)

GRADUATE STUDENTS

Ege Ozgirin – 2016 (MIT Graduate student)
Grace Kurian – 2018 - present (MD-PhD student @ U. Geneva & Hospital of Lausanne)

UNDERGRADUATE STUDENTS

Elia S. Harmatz 2010 - 2013 (MIT)
Sarah Wu – 2016 (MIT)
Meghana Yallenski - 2017 (Dartmouth College)
Sunny Tang – 2018 (Dartmouth College)
Fidelia Gaba – 2018 (MIT)
Ester Shmulyian – 2018 (MIT)
Kriti Jain – 2018 (MIT)
Katharine Wu 2018 - 2020 (Wellesley College)
Juliette Sanders 2018 - 2019 (Wellesley College)
Anaina Malik - 2019 (Wellesley College)
Aditi Abbayakumar – 2019 (Wellesley College)
Devanshi Gupta – 2019 (Wellesley College)
Laura Queipo – 2019 (MIT)
Rosalinda Xiong – 2019 (Wellesley College)
Alyssa Unell – 2020 (MIT)
Helen Hu – 2022 – 2023
Grace Hu – 2023-present (MIT)
Kaylee L. Ji – 2023-present (MIT)

OTHERS

Oscar Li – 2016 (BU RISE Scholar)
Shreyas Gupta – 2016 (BU RISE Scholar)
Serena Verma – 2016 (summer intern)
Srishti Sharkar – 2016 (summer intern)
Rohan Varma – 2016 (summer intern)
Nathaniel Lieberman – 2017 (BU RISE Scholar)
Coby Jolish – 2017 (summer intern)
Arjun Singla – 2017 (summer intern)
Neil Hazra – 2018 (BU RISE Scholar)
Jerry Zhang – 2018 (BU RISE Scholar)
Sidharta Vadaparty – 2018 (BU RISE Scholar)