

**TEL-AVIV UNIVERSITY**

NAME **Tom Schonberg**  
 Faculty of Life Sciences Department: **Neurobiology**

**A. EDUCATION**

<u>Period of Study</u>	<u>Name of University</u>	<u>Subject</u>	<u>Degree</u>
1999-2001	Tel Aviv University	Interdisciplinary program for outstanding students	
2001-2003	Tel Aviv University	Psychobiology,	M.A. <i>summa cum laude</i>
2004-2009	Tel Aviv University	Psychobiology,	Ph.D

**Title of Master's thesis / Supervisor:**

"Constructing a behavioral human replication of an animal model of OCD – excessive pressing following signal attenuation". Supervised by Dr. Daphna Joel, the department of Psychology, Tel Aviv University, Tel Aviv, Israel.

**Title of Doctoral Dissertation / Supervisor:**

"The Role of the Striatum in Reinforcement learning: evidence from fMRI and behavioral studies." Supervised by Prof. Daphna Joel, the department of Psychology, Tel Aviv University, Tel Aviv, Israel and by Prof. John O'Doherty from the California Institute of Technology, Pasadena, California, USA

**B. FURTHER STUDIES**

2009 – 2010	The University of California, Los Angeles	Poldrack Cognitive Neuroscience lab	Post-Doctoral Fellow
2010 – 2012	The University of Texas at Austin	Poldrack Cognitive Neuroscience lab	Post-Doctoral Fellow

**C. ACADEMIC AND PROFESSIONAL EXPERIENCE**

<u>Period</u>	<u>Name of Institution</u>	<u>Department</u>	<u>Rank/Function</u>
2001 - 2007	Tel Aviv University	Psychology	Teaching Assistant / Statistics for

			Psychologists
2004 - 2007	Tel Aviv University	Psychology	Head of Teaching Assistants and e-learning course / Statistics for Psychologists
2003 – 2004	Tel Aviv Sourasky Medical Center	The Wohl Institute for Advanced Imaging	Clinical fMRI analysis and research assistant
2012 - 2014	The University of Texas at Austin	Imaging Research Center	Research Associate
Oct 2014 - present	Tel Aviv University	Dept. of Neurobiology, School of Neurobiology, Biochemistry and Biophysics	Senior Lecturer

#### **D.1 ORAL PRESENTATIONS IN SCIENTIFIC MEETINGS**

<u>Month /Year</u>	<u>Name of Meeting</u>	<u>Sponsor / Location</u>
12/2003	Annual Meeting of the Israeli Society for Neuroscience	Israel
11/2004	Annual Meeting of the Israeli Society for Neuroscience	Israel
5/2005	Annual Meeting of the Society of Magnetic Resonance in Medicine	USA
12/2006	Annual Meeting of the Israeli Society for Neuroscience	Israel
7/2008	Tel Aviv Meeting on Human Brain Mapping	Israel
10/2008	Open Problems in Neuroscience of Decision Making	Japan
11/2008	Annual Meeting of the Society for Neuroscience	USA
9/2013	Annual Meeting of the Society for Neuroeconomics	Switzerland
12/2014	Annual Meeting of the Israeli Society for Neuroscience	Israel

#### **D.2 POSTER PRESENTATIONS IN SCIENTIFIC MEETINGS**

6/2004	Annual Meeting of the Organization for Human Brain Mapping	Hungary
6/2006	Annual Meeting of the Organization for Human Brain Mapping	Italy

6/2010	Annual Meeting of the Organization for Human Brain Mapping	Spain
11/2011	Annual Meeting of the Society for Neuroscience	USA
10/2012	Annual Meeting of the Society for Neuroscience	USA
6/2013	Annual Meeting of the Organization for Human Brain Mapping	USA
11/2008	Annual Meeting of the Society for Neuroscience	USA
9/2013	Annual Meeting of the Society for Neuroeconomics	Switzerland
12/2014	Annual Meeting of the Israeli Society for Neuroscience	Israel

#### **E. ACADEMIC AND PROFESSIONAL AWARDS**

<u>Year</u>	<u>Name of Institution</u>	<u>Occasion</u>
1999 - 2003	Tel Aviv University	Special Interdisciplinary Program for Outstanding Students – Full tuition scholarship
2002	Tel Aviv University	Special Interdisciplinary Program for Outstanding Students – Excellence in studies award
2003	Tel Aviv University	Faculty of Social Sciences Dean's list
2005	ISMRRM	Educational Stipend for Students
2006	Aharon Katzir-Kachlsky Center	Student Travel Fellowships
2006	Adams Super Center for Brain Studies	Best Publication of the year in Neuroscience
2006	Stanford University	Summer school in Neuroeconomics Travel Award
2007	Wolf Foundation	Excellent PhD students award
2008	National Institute for Psychobiology In Israel	Student Travel Fellowships

2003 - 2009	Tel Aviv University	The Levie-Edersheim-Gitter Institute for Functional Brain Imaging Scholarship
2009	Fulbright US-Israel	Fulbright Post-Doctoral Fellowship
2016	Tel Aviv University	Sieratzki prize for advances in Neuroscience

**E1. EXTERNAL FUNDING**

<u>Year</u>	<u>Name of Agency (and Partner if there is)</u>	<u>Amounts</u>		
		<u>Total</u>	<u>For my use (PI)</u>	<u>Partner (co-PI)</u>
2015 – 2020	Israeli Science foundation (ISF) individual grant	1.25M NIS	1.25M NIS	
2015 –2018	Israeli Science foundation (ISF) equipment	489K NIS	489K NIS	
2017 – 2021	European Research Council (ERC) Starting Grant	1.5M EUR	1.5M EUR	

**F. MEMBERSHIP IN PROFESSIONAL SOCIETIES**

2003 - Present	Human Brain Mapping Organization
2003 - Present	Israeli Society for Neuroscience
2007 - Present	Society for Neuroscience
2013 - Present	Society for Neuroeconomics

**G. STUDENTS SUPERVISED BY CANDIDATE****G1. DOCTORAL STUDENTS**

<u>Dates</u>	<u>Name</u>	<u>Title of thesis/proposal</u>	<u>Institution (if not TAU)</u>
10/2014 -	Rotem Botvinik-Nezer	Longitudinal neural changes underlying non-reinforced behavioral change and maintenance	
10/2015 -	Nadav Aridan	The Neural Mechanisms of Effort Based Decision-making	
10/2015 -	Shiran Oren	Different values or one? Studying value representation and its change of fractals, tastes and emotions with reinforcement and without	
10/2016 -	Tom Salomon	Prediction and Facilitation of Learning	

## Using Neural Activity

**G2. M.Sc. STUDENTS**

<u>Dates</u>	<u>Name</u>	<u>Title of thesis/proposal</u>	<u>Institution (if not TAU)</u>
10/2014 - 9/2016	Tom Salomon	Cue-approach as a general mechanism of non-reinforced learning in humans	
10/2015 -	Oren Kobo	Changing the value of food items through generalisation	
10/2015 -	Rani (Shiran) Gera	Counterconditioning During Reconsolidation of Appetitive Reward-Related Memories in Humans - Establishing a Paradigm	
4/2016 -	Roni Iwanir	Behavioral change through multiple mechanisms	

**H. COURSES TAUGHT** (for each course, the pts should be proportional to amount of course taught by candidate (e.g. is teaching 1/3 of a 3 pt course, then write "1 of 3". For evaluation, use the lecturer score for that year)

<u>Year, Semester</u>	<u>Course</u>	<u>hrs</u>	<u>Evaluation (scale of 7)</u>
Fall 2015	Introuction to FSL: a neuroimaging analysis package	2	6
Fall 2016	Introuction to FSL: a neuroimaging analysis package	2	
2015 - 2016	Neuroimaing center seminar	2	
2016 - 2017	Advanced topics in MRI and fMRI	2	
2015 - 2016	Sagol School of Neuroscience Undergraduate seminar and advisor	2	6
2016 - 2017	Sagol School of Neuroscience Undergraduate seminar and advisor	2	

**I. OTHER ACADEMIC ACTIVITES**

Conference Organizing, International committees, Lectures

Invited seminars  
(University and  
year)

- 2015 Behavioural science institute colloquium, Radboud university, Nijmegen, NL – special invitation
- 2015 Decision-making in the food domain symposium, Utrecht University, Utrecht, NL – special invitation
- 2016 Hong Kong Shue Yan University, Hong Kong, Interdisciplinary research platform - special series 3 talk speaker
- 2016 20<sup>th</sup> Israeli Society for Biological Psychiatry, Haghosrim, Israel - Symposium organizer and speaker
- 2017 Latin America Brain Mapping Conference, Buenos Aires, Argentina, Speaker
- 2017 Conference on Cognitive Improvement: Approaches, Mechanisms and Applications, Bar-Ilan, Israel, Speaker

Tel Aviv University Administrative Roles

Scientific committee – Minducate center

Graduate studies in Faculty of life sciences – Department representative

**Outreach volunteer talks**

2015 WIZE: talk on Science day in Tel Aviv

2015, 2016, 2017: Brain awareness talk in Ramle PAIS Center for science

2015 European Union Scientist night: Main stage talk in Tel Aviv University

2015 TIKUN SHAVUOT: Talk in Herzliya community center

2016 Tel Aviv White Night: Tel Aviv University stage

2017 WIZE: Bar in Ashdod

**PUBLICATIONS (as of July 5, 2017)****Rankings and citations based on Web of Scicene****C1. Refereed Research Articles:**Graduate research:

1. **Schonberg T.**, Pianka P., Hendler T., Pasternak O., and Assaf Y. (2006) Characterization of displaced white matter by brain tumors using combined DTI and fMRI. *NeuroImage*, 30(4):1100-11. (IF=5.463, Neurosciences Q1 31/256, Citations=123).
2. Siman-Tov T., Mendelsohn A., **Schonberg T.**, Avidan G., Gadoth N., Pessoa L., Ungerleider LG., Hendler T. (2007) Bi-hemispheric leftward bias in a visuospatial attention-related network. *Journal of Neuroscience*, 27(42):11271-8. (IF=5.924, Neurosciences Q1 26/256, Citations=73).
3. **Schonberg T.**, Daw N., Joel D., O'Doherty JP. (2007) Reinforcement learning signals in the human striatum distinguish Learners from Non-learners during reward-based decision making. *Journal of Neuroscience*, 27(47):12860-7. (IF=5.924, Neurosciences Q1 26/256, Citations=171).
4. Siman-Tov T, Papo D, Gadoth N, **Schonberg T.** Mendelsohn A, Perry D, Hendler T. (2009) Mind Your Left: Spatial Bias in Subcortical Fear Processing. *Journal of Cognitive Neuroscience*, 21(9):1782-9. (IF=3.559, Psychology Experimental Q1 9/85, Citations=12).
5. **Schonberg T.**, O'Doherty JP, Joel D., Inzelberg R., Segev Y., Daw ND. (2010) Selective impairment of prediction error signaling in human dorsolateral but not ventral striatum in Parkinson's disease patients: evidence from a model-based fMRI study. *NeuroImage*, 49(1): 772-81. (IF=5.463, Neurosciences Q1 31/256, Citations=46).

Postdoctoral research:

6. **Schonberg, T.**, Fox, C. R., Mumford, J. A., Congdon, Trepel, C. and Poldrack, R. A. (2012) Decreasing ventromedial prefrontal cortex activity during sequential risk-taking: an fMRI investigation of the balloon analog risk task. *Frontiers in Neuroscience*, 6. (IF=3.398, Neurosciences Q2 88/256, Citations=29).
7. Poldrack, RA, Mumford, J.A., **Schonberg, T.**, Kalar, D., Barman, B. and Yarkoni, T. (2012) Discovering relations between mind, brain, and mental disorders using topic mapping. *PLoS Computational Biology*, 8(10). (IF=4.587, Mathematical and Computational Biology Q1 5/56, Citations=24).
8. Congdon, E., Bato, A., **Schonberg, T.**, Mumford, J. A., Karlsgodt, K. H., Sabb, F. W., Cannon, T. D., London, E. D., Bilder, R. M., Freimer, N. B., & Poldrack, R. A. (2013) Differences in Neural Activation as a Function of Risk-taking Task Parameters. *Frontiers in Neuroscience*, 7. (IF=3.398, Neurosciences Q2 88/256, Citations=4)
9. Galván A.\*, **Schonberg T.\***, Mumford A. J., Kohno M., Poldrack R. A., London E.D. (2013) Greater Risk-Sensitivity of Dorsolateral Prefrontal Cortex in Young Smokers than in Nonsmokers. *Psychopharmacology (Berl)*. 229(2): 345-55

(\*Equal contribution). (IF=3.54, Pharmacology & Pharmacy Q1 61/255, Citations=19)

10. **Schonberg T.**, Bakkour A., Hover A. M., Mumford J. A., Poldrack, R. A. (2014) Influencing food preferences by training: Evidence for modulation of frontoparietal control signals. *Journal of Cognitive Neuroscience*, 26(2): 247-68 (IF=3.559, Psychology Experimental Q1 9/85, Citations=8).
11. Helfinstein S. M., **Schonberg T.**, Congdon E., Karlsgodt K. H., Sabb F. W., Cannon T. D., London E. D., Bilder R. M., Poldrack R. A. (2014) Predicting risky choices from brain activity patterns. *Published online ahead of print, PNAS* (IF=9.423, Multidisciplinary Sciences Q1 4/63, Citations=25)
12. **Schonberg T.**, Bakkour A., Hover A. M., Mumford J. A., Nagar L., Perez J., Poldrack, R. A. Changing value through cued approach: An automatic mechanism of behavior change. *Nature Neuroscience*, 17: 625-630 (IF=16.74, Neurosciences Q1 4/256, Citations=21)

The following articles are with a Tel Aviv University affiliation:

13. Bakkour A., Leuker C., Hover A. M., Giles N. R., Poldrack R. A., **Schonberg T\***. (2016) Mechanisms of Choice Behavior Shift Using Cue-approach Training. *Frontiers in Psychology* (7) (IF=2.463, Psychology Multidisciplinary Q1 29/129, Citations=NA).
14. Bakkour A., Lewis-Peacock J. A., Poldrack R. A., **Schonberg T\***. (2016) Mechanisms of Choice Behavior Shift Using Cue-approach Training. *NeuroImage* (IF=5.463, Neurosciences Q1 31/256, Citations=NA)
15. Salomon T., Botvinik-Nezer R., Gutentag T., Gera R., Iwanir R., Tamir M., Schonberg T\*. A General Mechanism for Long Term Non-Reinforced Behavioral Change. (Under review).

\*Corresponding senior author

## **C2. Refereed Review Articles:**

Postdoctoral research:

16. **Schonberg T.**, Fox CR., Poldrack RA. (2011) Mind the Gap: Bridging economic and naturalistic risk-taking with cognitive neuroscience. *Trends in Cognitive Sciences*. 15(1):11-9. (IF=17.85, Neurosciences Q1 3/256, Citations=73).

## **D. Chapters in Books:**

Malecek N.J., and Schonberg T. Neuroimaging of Economic Decision-Making. In: Arthur W. Toga, editor. Brain Mapping: An Encyclopedic Reference. Academic Press: Elsevier; 2015. pp. 409-415.



### G. Abstracts at International Meetings (since appointment at Tel Aviv University):

1. Salomon, T., Botvinik-Netzer, R., Israel, S., Schonberg, T. Novel findings with the cue-approach task extends preference changes to faces and fractals, Society for Neuroscience, Chicago, 2015.
2. Botvinik Nezer R., Tavor I., Assaf Y. and Schonberg T. Neural changes underlying non-reinforced behavioral change and maintenance. Israeli Society for Neruoscience (ISFN), Eilat, 2015.
3. Salomon, T., Botvinik-Netzer, R., Israel, S., Schonberg, T. Preference modification towards faces and fractals without external reinforcement or context change, ISFN, Eilat, 2015
4. Aridan N., Ben-Yaakov T. and Schonberg T. Different levels of physical effort influence subjective value and the use of cue-approach to manipulate perceived effort in a hand grip task, ISFN, Eilat, 2015.
5. Botvinik Nezer R., Tavor I., Assaf Y. and Schonberg T. Neural changes underlying non-reinforced behavioral change and maintenance. Organization for Human Brain Mapping (OHBM), Geneva, 2016.
6. Pelletier G., Aridan N., Fellows L.K., Schonberg T. Does value updating with cue-approach training require prefrontal cortex? 38<sup>th</sup> GRSNC, Montréal, 2016.
7. Kobo O., Davis, T., Schonberg T. Changing the value of food items through generalization, Israeli Society for Cognitive Psychology (ISCOP), Acre, 2017.
8. Oren S., Salomon T., Botvinik Nezer R., Aridan N., Ataria J., Gera S., Iwanir R., Schonberg T. Studying The Behavioral Characteristics Of The Valuation Process, IS COP, Acre, 2017.
9. Aridan N., Ben-Yaakov T. and Schonberg T. Item-Effort Learning Result in Shift of Preference Toward the Higher-Effort Items in an Effort- Irrelevant Binary Choice Probe, IS COP, Acre, 2017.
10. Kobo O., Davis, T., Schonberg T. Changing the value of food items through generalization, BrainTech, Tel Aviv, 2017.
11. Salomon, T., Botvinik-Netzer, R. Gutentag, T., Gera, R., Iwanir, R., Tamir, M., Schonberg, T. Cue approach task as a general mechanism for non-reinforced behavioral change: behavioral and imaging findings, IS COP, Acre, 2017
12. Salomon, T., Botvinik-Netzer, R., Oren, S., Schonberg, T. The neural basis of non-reinforced learning: an fMRI study of the cue-approach task with faces, OHBM, Vancouver, 2017