

BAR-ILAN UNIVERSITY

FACULTY OF SOCIAL SCIENCE

School of Education

CURRICULUM VITAE

Name: Nira Mashal

EDUCATION

| Year | Degree | Institution |
|---------------------------|---|--|
| 1991 | B.A., Mathematics | Technion, Israel Institute of Technology, Israel |
| 1996 | B.A., Mathematics in Education, The Department of Education in Technology and Science | Technion, Israel Institute of Technology, Israel |
| 1998 | M.A, Mathematics | Technion, Israel Institute of Technology, Israel |
| 2006 | Ph.D., Brain Science, The Leslie and Susan Gonda (Goldschmied) Multidisciplinary Brain Research Center. | Bar-Ilan University, Israel |
| <u>THESIS:</u> | Cerebral Processing of Metaphoric Language: a Functional Magnetic Resonance Imaging (fMRI) Investigation. | |
| <u>SUPERVISOR:</u> | Prof. Miriam Faust, The Leslie and Susan Gonda (Goldschmied) Multidisciplinary Brain Research Center, and Department of Psychology, Bar-Ilan University | |

ACADEMIC AFFILIATIONS/APPOINTMENTS

| Year | Appointment |
|-------------|---|
| 1998-9 | Lecturer, Open University of Israel, Tel Aviv, Israel |

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| 2003-5 | Research Coordinator, Functional Brain Imaging Unit, Wohl Institute for Advanced Imaging, Tel-Aviv Sourasky Medical Center, and The Leslie and Susan Gonda (Goldschmied) Multidisciplinary Brain Research Center, Bar-Ilan University, Israel. |
| Post-Doctoral: | Northwestern Institute of Neuroscience (NUIN), Department of Psychology, Northwestern University, Evanston, IL, USA. Prof. Mark Beeman |
| Post-Doctoral: | Human Neuroscience Laboratory, Department of Neurology, University of Chicago, Chicago, IL, USA. Prof. Steven Small |
| 2008-2014 | Senior lecturer- Tenure, School of Education, Bar-Ilan University, Ramat-Gan, Israel |
| 2009- present | Instructor, Open University of Israel, Raanana, Israel |
| 2010- present | Member at the Gonda (Goldschmied) Multidisciplinary Brain Research Center, Bar-Ilan University, Israel. |
| 2014 | Associate Professor, School of Education, Bar-Ilan University, Ramat-Gan, Israel |

MAIN RESEARCH INTERESTS

1. Neural bases of non-literal language comprehension.
2. Semantic processing at the word, sentence and text level.
3. Using transcranial direct current stimulation (tDCS) to enhance language and cognitive performances in aphasia and schizophrenia.
4. Neural correlates of figurative language processing in schizophrenia.
5. Developing cognitive intervention programs to enhance language and cognitive competence in special populations including children with autism, schizophrenia, and

intellectual disability.

6. Language processing and brain asymmetry in the aging brain.

7. Verbal creativity in special populations.

ADDITIONAL INFORMATION

1. Vice head School of Education.
2. Chair, Master's degree committee
3. Member in the ethical committee at the School of Education.
4. Head of the special education program.
5. Member at the Gonda Multidisciplinary Brain Research Center, Bar-Ilan University.

LIST OF PUBLICATIONS

CHAPTERS IN BOOKS

1. Mashal, N., Andrick M., and Small S. (2011). "Motor cortical activation during speech perception". In M. Faust (Ed.), *Advances in the Neural Substrates of Language: Toward a synthesis of Basic Science and Clinical Research*". Wiley Blackwell: USA.
2. Mashal, N. (2012). *Nonliteral comprehension deficits in children with learning disabilities: Implication of brain imaging technology* (pp. 211- 219). In A. Shamir & O. Korat (Eds.). *Technology for Literacy Achievements for Children at Risk*. Springer: USA.
3. Mashal, N., & Kasirer, A. (2013). *Understanding verbal and visual metaphors in Autism* (pp. 651-670). In V.B. Patel et al. (Eds.). *The Comprehensive Guide to Autism*. Springer: USA.

ARTICLES IN REFEREED JOURNALS/PERIODICALS

1. Hershkowitz, D. and Mashal, N. (1998). $P\alpha$ -matrices and Lyapunov scalar stability. *The Electronic Journal of Linear Algebra*, 4, 39-47.

2. Mashal, N., Faust, M., & Hendler, T. (2005). The role of the right hemisphere in processing nonsalient metaphorical meanings: Application of Principal Components Analysis to fMRI data. *Neuropsychologia*, 43, 2084-2100.
3. Mashal, N., Faust, M., Hendler, T., & Jung-Beeman, M. (2007). An fMRI investigation of the neural correlates underlying the processing of novel metaphoric expressions. *Brain and Language*, 100, 115-126. **The most cited paper since 2007 in *Brain and Language* as for 2012.**
4. Faust, M., & Mashal, N. (2007). RH advantage in processing novel metaphoric expressions: Behavioral data. *Neuropsychologia*, 45, 860-870.
5. Mashal, N., & Faust, M. (2008). Right hemisphere sensitivity to novel metaphoric relations: Application of the signal detection theory. *Brain and Language*, 104, 103-112.
6. Mashal, N., Faust, M., Hendler, T. & Jung-Beeman, M. (2008). Hemispheric differences in processing the literal interpretation of idioms: Converging evidence from behavioral and fMRI studies. *Cortex*, 44, 848-860.
7. Pobric, G., Mashal, N., Faust, M., & Lavidor, M. (2008). The causal role of the right cerebral hemisphere in processing novel metaphoric expressions taken from poetry: A TMS study. *Journal of Cognitive Neuroscience*, 20, 170-181.
8. Mashal, N., Faust, M., Hendler, T., & Jung-Beeman, M. (2009). An fMRI study of processing novel metaphoric sentences. *Laterality*, 14, 30-54.
9. Mashal, N., & Faust, M. (2009). Conventionalization of novel metaphors: A shift in hemispheric asymmetry. *Laterality*, 14, 573-589.
10. Mashal, N., & Faust, M. (2010). The effects of metaphoricity and presentation style on brain activation during text comprehension. *Metaphor and Symbol*, 25(1), 19 – 33.

11. Mashal, N., Gavrieli, R., & Kavé, G. (2011). Age-related changes in the appreciation of novel metaphoric semantic relations, *Aging, Neuropsychology, and Cognition*, 18 (5), 527–543.
12. Mashal, N., & Kasirer, A. (2011). Thinking maps enhance metaphoric competence in children with autism and learning disabilities. *Research in Developmental Disabilities*, 32, 2045–2054.
13. Mashal, N., & Kasirer, A. (2012a). Principal component analysis study of visual and verbal metaphoric comprehension in children with autism and learning disabilities. *Research in Developmental Disabilities*, 33, 274–282.
14. Kavé, G., & Mashal, N. (2012): Age-related differences in word-retrieval but not in meaning generation, *Aging, Neuropsychology, and Cognition*, 18, 527-543.
15. Mashal, N., Solodkin A., Dick, A., Chen, E.E., & Small, S.L. (2012) A Network Model of Observation and Imitation of Speech. *Frontiers in psychology*, 3:84. doi:10.3389/fpsyg.2012.00084.
16. Mashal, N. & Kasirer, A. (2012b). The relationship between visual metaphor comprehension and recognition of similarities in children with learning disabilities. *Research in Developmental Disabilities*, 33, 1741-1748.
17. Subramaniam, K., Faust, M., Beeman, M., & Mashal, N. (2012). The Repetition Paradigm: Enhancement of novel metaphors and suppression of conventional metaphors in the left inferior parietal lobe. *Neuropsychologia*, 50, 2705–2719.
18. Subramaniam, K., Beeman, M., Faust, M., & Mashal, N. (2013). Positively-valenced stimuli facilitate creative novel metaphoric processes by enhancing medial prefrontal cortical (mPFC) activation. *Frontiers in Psychology*, 4:211. doi: 10.3389/fpsyg.2013.00211.

19. Mashal, N., Vishne, T., Laor, N., & Titone, D. (2013). Enhanced left frontal involvement during novel metaphor comprehension in schizophrenia: Evidence from functional neuroimaging. *Brain and Language*, 124, 66-74.
20. Mashal, N. (2013). The role of working memory in the comprehension of unfamiliar and familiar metaphors. *Language and Cognition*, 5(4), 409- 436.
21. Mashal, N. & Itkes, O. (2014). The effects of emotional valence on hemispheric processing of metaphoric word pairs. *Laterality*, 19, 511-521.
22. Mashal, N., Shen, Y., & Kastel, D. (2014). Element Order in Metaphorical and Literal Phrases. *Metaphor and symbol*, 29 (2), 113-128.
23. Mashal, N., & Coblenz, S. (2014). Creative interpretations of novel conceptual combinations in aging. *Creativity Research Journal*, 26(2), 158–164.
24. Kavé, G., Gavrieli, R., & Mashal, N. (2014). Stronger left-hemisphere lateralization due to accumulated knowledge in older versus younger adults. *Laterality*, 19, 705-717.
25. Mashal, N., Shen, Y., Jospe, K., & Gil, D. (2014). Language effects on the conceptualization of hybrids. *Language and Cognition*, 6, 217– 241.
26. Kesner-Baruch, Y., Spector-Levy, O., & Mashal, N. (2014). Preschoolers' verbal and Behavioral responses as indicators of attitudes and scientific curiosity. *International Journal of Science and Mathematics Education*. (DOI) 10.1007/s10763-014-9573-6.
27. Mashal, N., Vishne, T., & Laor, N. (2014). The role of the precuneus in metaphor comprehension: Evidence from an fMRI study in people with schizophrenia and healthy participants. *Frontiers in Human Neuroscience*, 8. 818.
28. Shen, Y., Aharoni, B., & Mashal, N. (2015). Taxonomic and ad hoc categorization within the two cerebral hemispheres. *Laterality*. DOI: 10.1080/1357650X.2015.1006235

29. Kasirer, A., & Mashal, N. (2014). Verbal creativity in autism: Comprehension and generation of metaphoric language in high-functioning autism spectrum disorder and typical development. *Frontiers in Human Neuroscience*, 8, 615.
doi:10.3389/fnhum.2014.00615.
30. Itkes, O., & Mashal, N. (2015). Processing negative valence of word pairs that include a positive word. *Cognition and Emotion*. DOI: 10.1080/02699931.2015.1039934.
31. Mashal, N., Borodkin, k., Maliniak, O., & Faust, M. (2015). Hemispheric Involvement in Native and Non-Native Comprehension of Conventional Metaphors. *Journal of Neurolinguistics*, 35, 96- 108.
32. Lifshitz-Vahav, H., Shnitzer, S., & Mashal, N. (2015). Participation in recreation and cognitive activities as a predictor of cognitive performance of adults with/without Down syndrome. *Aging and Mental Health*. DOI: 10.1080/13607863.2015.1047322.
33. Saban- Bezalel, R. & Mashal, N. (2015). Hemispheric Processing of Idioms and Irony in Adults with and without Pervasive Developmental Disorder. *Journal of Autism and Developmental Disorders*. DOI: 10.1007/s10803-015-2496-4

PAPERS PRESENTED AT SCIENTIFIC CONFERENCES (selected)

1. Mashal, N., Faust, M. and Hendler, T., “The role of the right Wernicke in processing novel metaphorical expressions: Cortical correlations evaluated with principal component analysis and fMRI”. Tenth Annual Meeting of the Organization for Human Brain Mapping, Budapest, Hungary, 2004.
2. Mashal, N., “Processing conventional vs. novel metaphors by the two cerebral hemispheres: A Functional Imaging Study (fMRI)“, The Adams Super Center for

Functional Brain Research, Tel Aviv University, 2004.

3. Mashal, N., "Processing conventional vs. novel metaphors by the two cerebral hemispheres: Application of Principal Components Analysis to fMRI data ", The Israel Society for Cognitive Psychology, Bar-Ilan University, 2004.
4. Mashal, N., Faust, M. and Hendler, T., "Unique involvement of right Wernicke in processing novel metaphorical expressions: Application of Principal Components Analysis to fMRI data". Sixteen Annual meeting of Theoretical and Experimental Neuropsychology, Montreal, QC, Canada, 2005.
5. Mashal, N., Faust, M. & Hendler, T., "Processing novel metaphoric sentences taken from poetry: An fMRI study". 47th Annual Meeting of the Psychonomic Society, Houston, Texas, USA, 2006.
6. Mashal, N, Faust, M, & Hendler, T., Unique involvement of the right homologue of Wernicke's area in processing novel metaphorical expressions: Application of principal components analysis to fMRI data. Source: Brain and Cognition, 60(3), 314-314, Published: APR 2006.
7. Mashal, N., Faust, M., "conventionalization of novel metaphors: A shift in hemispheric asymmetry". A poster presented at the Language, Brain, Communication Conference Program, Hadassa college, Jerusalem, 2009.
8. Mashal N. "The 2010 Israeli Magnetic Resonance Society Meeting (IMRSM), "Recruitment of bilateral prefrontal regions in schizophrenia during novel metaphoric processing: an fMRI Study". Poster presented in June 8-9, 2010, Bar-Ilan University, Israel.
9. Mashal N. "Recruitment of bilateral prefrontal regions in schizophrenia during novel metaphoric processing: an fMRI Study". 2nd Biennial Schizophrenia International Research Conference (SIRS). Poster presented in April 10-14, 2010, Florence, Italy.

10. Mashal, N., Chair, "An investigation of the neural correlates of forming novel semantic relations". International Association for Cognitive Education and Psychology. IACEP 2011: Boston, July 10-14, 2011.
11. Mashal, N., "Novel metaphor comprehension: Insights from special populations and the healthy brain ". A workshop on Brain Imaging of Language Functions, The Gonda Multidisciplinary Brain Research Center, Bar Ilan University , June 19-20, 2011.
12. Mashal, N. & Subramaniam, K., "An investigation of the neural correlates of forming novel semantic relations". Poster presented in The 10th INTERNATIONAL SYMPOSIUM OF PSYCHOLINGUISTICS, April 13-16, 2011, Spain.
13. Mashal, N., Chair, Lexical processes. The Israel association of language and literacy. Kiryat-Ono, 1st July, 2012.
14. Adi Lifshitz Ben Basat, Aviah Gvion, Jean-Jacques Vatine, & Nira Mashal. "Transcranial direct current stimulation (tDCS) to improve naming in patients with chronic Aphasia". Poster presented in the 42 annual meeting of the Society of Neuroscience (SFN): Poster presented in October, 10-14, 2012, New-Orleans, USA.
15. Mashal, N., Chair, "Cognition and emotion", Cognitive education, modifiability, learning, and the brain, Bar-Ilan University, 7 January, 2013.
16. Kesner, Y. Mashal, N., & Spector-Levi, O. "Preschoolers' Metaphors Generation during Scientific Engagement as Indicator of Curiosity & Attitude". EARLI 2013.
17. Adi Lifshitz Ben Basat, Aviah Gvion, Jean-Jacques Vatine, Nira Mashal. "Transcranial direct current stimulation to improve naming abilities of persons with chronic aphasia: An individualized based protocol". Neural Plasticity and cognitive modifiability. Jerusalem, 2-5 June, 2013.

18. Mashal, N., Chair, Language production: studies in dyslexia, aphasia, autism, and intellectual disabilities. The Israel association of language and literacy. Kiryat-Ono, 4 July, 2013.
19. Mashal, N., Forming novel semantic relations in special populations and the normal brain. The Creating Mind: Interdisciplinary Perspectives. Bar-Ilan University, 18 December, 2013.
20. Segal, D. Shalev-Mevorach, L , and Mashal, N. Attenuated hemispheric specialization in metaphor processing among adults with ADHD. Second Conference on Cognition Research of the Israeli Society for Cognitive Psychology (2015), February, 24, Akko.
21. Ronit Saban, Shmuel Hess, Dror Dolfon, Hagai Hermesh, Tali Vishne, and Nira Mashal. Hemispheric Processing of Idioms in Schizophrenia and Autism Spectrum Disorder . Israel Society of Biological Psychiatry. Hagoshrim (2015), March, 24- 26.
22. Ronit Saban, Shmuel Hess, Dror Dolfon, Hagai Hermesh, Tali Vishne, and Nira
23. Mashal. Hemispheric Processing of Idioms in Schizophrenia and Autism Spectrum Disorder. The 15th conference of the Israeli Psychiatric Association, Tel-Aviv, May 26th - May 28th, 2015.