Exponent®
Engineering & Scientific Consulting

Ilke Oztekin, Ph.D.

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Professional Profile

Dr. Öztekin's expertise centers around the behavioral and brain mechanisms of human information processing, with particular focus on human memory, attention, and executive function. At Exponent, Dr. Öztekin uses her expertise in human cognition and neuroscience to support investigations related to human factors pertinent in accidents and injuries, driver behavior, human information processing and decision making, evaluation of warnings and safety information, as well as the design and analysis of surveys and behavioral/user studies.

Dr. Öztekin has studied individual differences in capacity and efficiency of information processing in healthy adults, in addition to the behavioral and brain mechanisms that undergo changes during typical and atypical development, and in aging. She has more than 15 years of experience directing research projects involving human subjects, utilizing a variety of experimental methods, including cognitive, behavioral and brain imaging studies. Her research has employed a breadth of statistical approaches that entail quantitative data analysis techniques and predictive modeling using machine learning. Dr. Öztekin's research and published work spans multiple disciplines in the Cognitive Sciences, including Experimental Psychology, Developmental Psychology, Clinical Psychology, Computational Psychology/Neuroscience, as well as Cognitive and Translational Neuroscience.

Dr. Öztekin received her PhD from the Cognition & Perception program of New York University's Department of Psychology and completed her postdoctoral training at the Department of Cognitive and Linguistic Sciences at Brown University. Prior to joining Exponent, Dr. Öztekin served her scientific community through teaching, mentoring, and conducting research on human cognition and neuroscience for over ten years through academic appointments she held as core faculty at the Department of Psychology at Koç University, and as research faculty at the Center for Children and Families at Florida International University.

Academic Credentials & Professional Honors

Ph.D., Experimental Psychology, New York University, 2008

M.A., Psychology, New York University, 2006

American Psychological Association New Investigator Award in Experimental Psychology, 2011

Google Research Award, 2011

New York University Dean's Dissertation Fellowship, 2007

American Psychological Association Dissertation Research Award, 2006

American Psychological Foundation, and Council of Graduate Departments of Psychology Graduate Scholarship, 2006

Academic Appointments

Research Assistant Professor, Center for Children and Families, Florida International University

Associate Professor, Department of Psychology, Koç University

Assistant Professor, Department of Psychology, Koç University

Professional Affiliations

American Psychological Association

Cognitive Neuroscience Society

Flux Society

Human Factors and Ergonomics Society

Psychonomic Society

Society for Neuroscience

Publications

Peer Reviewed Journal Articles

Öztekin, I., Garic, D., Bayat, M., Hernandez, M. L., Finlayson, M. A., Graziano, P., & Dick, A. S. (2022). Structural and diffusion-weighted brain imaging predictors of attention-deficit/hyperactivity disorder and its symptomology in very young (4-7-year-old) children. European Journal of Neuroscience. http://doi.org/10.1111/ejn.15842

Öztekin, I., Finlayson, M., Graziano, P., & Dick, A. S. (2021). Is there any incremental benefit to conducting neuroimaging and neurocognitive assessments in the diagnosis of ADHD in young children? A machine learning investigation. Developmental Cognitive Neuroscience, 49, https://doi.org/10.1016/j.dcn.2021.100966.

Mızrak, E., Singmann, H., & Öztekin, I. (2018). Forgetting of emotional material in working memory. Social Cognitive and Affective Neuroscience, 13, 331-340.

Önal, I., Özay, M., Mızrak, E., Öztekin, I., & Yarman Vural, F.T. (2017). A new representation of fMRI signal by a set of local meshes for brain decoding. IEEE Transactions on Signal and Information Processing over Networks, 3, 683-694.

Kılıç, A., Sayalı, Z.C. & Öztekin, I. (2017). Aging slows access to temporal order information in working memory. Journal of Gerontology: Psychological Sciences, 72, 996-1005.

Mızrak, E. & Öztekin, I. (2016). Working memory capacity and controlled serial memory search. Cognition, 153, 52-62.

Mızrak, E. & Öztekin, I. (2015). Relationship between emotion and forgetting. Emotion, 16, 33-42.

Öztekin, I., & Cowan, N. (2015). Editorial: Representational states in memory: where do we stand? Frontiers in Human Neuroscience, 9:453. doi: 10.3389/fnhum.2015.00453.

Kılıç, A. & Öztekin, I. (2014). Retrieval dynamics of the strength based mirror effect in recognition memory. Journal of Memory and Language, 57, 158-173.

Fırat, O., Özay, M., Önal, I., Öztekin, I., & Yarman Vural, F.T. (2013). Enhancing local linear models using functional connectivity for brain decoding. International Journal of Cognitive Informatics and Natural Intelligence, 7, 46-57.

Barredo, J., Öztekin, I., & Badre, D. (2013). Ventral fronto-temporal pathway supporting cognitive control of episodic memory retrieval. Cerebral Cortex, doi:10.1093/cercor/bht291.

Öztekin, I., Gungor, N.Z., & Badre, D. (2012). Impact of aging on the dynamics of short-term memory retrieval: A time-course analysis. Journal of Memory and Language, 67, 285-294.

Öztekin, I., & Badre, D. (2011). Distributed patterns of brain activity that lead to forgetting, Frontiers in Human Neuroscience, 5, doi:10.3389/fnhum.2011.00086.

Long, N.M., Öztekin, I., & Badre, D. (2010). Separable prefrontal mechanisms during free recall. Journal of Neuroscience, 30, 10967-10976.

Öztekin, I., Davachi, L., & McElree, B. (2010). Are representations in working memory distinct from those in long-term memory? Neural evidence in support of a single store. Psychological Science, 21, 1123-1133.

Öztekin, I., & McElree, B. (2010). Relationship between working memory capacity measures and the timecourse of short-term memory retrieval and interference resolution. Journal of Experimental Psychology: Learning, Memory, and Cognition, 36, 383-398.

Öztekin, I., Long, N.M., & Badre, D. (2009). Optimizing design efficiency of free recall events for fMRI. Journal of Cognitive Neuroscience, 22, 2238-2250.

Öztekin, I, Curtis, C., & McElree, B. (2009). Medial temporal lobe and the left inferior prefrontal cortex jointly support interference resolution in verbal working memory. Journal of Cognitive Neuroscience, 21, 1967-1979.

Öztekin, I., McElree, B., Staresina B., & Davachi, L. (2008). Working memory retrieval: Contributions of left prefrontal cortex, left posterior parietal cortex and hippocampus. Journal of Cognitive Neuroscience, 21, 581-593.

Öztekin, I., & McElree, B. (2007). Retrieval dynamics of proactive interference: PI slows retrieval by eliminating fast assessments of familiarity. Journal of Memory and Language, 57, 126-149.

Peer Reviewed Chapters

Fırat, O., Aksan, E., Öztekin, I. & Yarman Vural, F. T. (2015). Learning deep temporal representations for fMRI brain decoding. In K. K. Bhatia & H. Lambert (Eds.), Machine Learning Meets Medical Imaging, pp. 25-32. Switzerland: Springer International Publishing.

Peer Reviewed Proceedings

Singmann, H., Kellen, D., Mızrak, E., & Öztekin, I. (2018). Using Ensembles of Cognitive Models to Answer Substantive Questions, In CogSci Proceedings.

Sucu, G., Akbaş, E. Öztekin, I., Mızrak, E. & Yarman-Vural, F.T. (2016). Decoding cognitive states using

the bag of worms model in fMRI time series. Proceedings of the IEEE Signal Communication and Applications Conference, doi: 10.1109/SIU.2016.7496222.

1Singmann, H., Kellen, D., *Mızrak, E., & Öztekin, I. (2018). Using Ensembles of Cognitive Models to Answer Substantive Questions, In CogSci Proceedings.

Sucu, G., Akbaş, E. Öztekin, I., *Mızrak, E. & Yarman-Vural, F.T. (2016). Decoding cognitive states using the bag of worms model in fMRI time series. Proceedings of the IEEE Signal Communication and Applications Conference, doi: 10.1109/SIU.2016.7496222.

Yıldız, O., Doğan, F.I., Öztekin, I. & Yarman-Vural, F.T. (2016). A Robust normalization method using fMRI data for brain decoding. Proceedings of the IEEE Signal Communication and Applications Conference, doi: 10.1109/SIU.2016.7496228.

Fırat, O., Öztekin, I. & Yarman-Vural, F.T. (2014). Deep learning for brain decoding. Proceedings of the IEEE International Conference on Image Processing, doi: 10.1109/ICIP.2014.7025563.

Fırat, O., Aksan, E., Velioglu, B., Öztekin, I. & Yarman-Vural, F.T. (2014). Large scale functional connectivity for brain decoding. Proceedings of the 11th IASTED International Conference on Biomedical Engineering.

Önal, I., Aksan, E., Velioğlu, B., Fırat, O., Özay, M., Öztekin, I. & Yarman-Vural, F.T. (2014). Modeling brain connectivity for pattern analysis. Proceedings of the 22nd International Conference on Pattern Recognition, doi: 10.1109/ICIPR.2014.575.

Önal, I., Özay, M., Fırat, O., Öztekin, I., Yarman Vural, F. T. (2013). An information theoretic approach to classify cognitive states using fMRI. Proceedings of the 13th International Conference on Bioinformatics and Bioengineering, doi:10.1109/BIBE.2013.6701565.

Ekmekçi, Ö., Özay, M., Öztekin, I., Yarman Vural, F.T., & Öztekin, U. (2013). Mesh learning for object classification using fMRI measurements. Proceedings of the IEEE International Conference on Image Processing, doi:10.1109/ICIP.2013.6738542.

Fırat, O., Özay, M., Önal, I., Öztekin, I., & Yarman Vural, F.T. (2013). Functional mesh learning for pattern analysis of cognitive processes. Proceedings of the IEEE International Conference on Cognitive Informatics and Cognitive Computing, doi:10.1109/ICCI-CC.2013.6622239.

Önal, I., Özay, M., Fırat, O., Öztekin, I., & Yarman Vural, F. T. (2013). Analyzing the information distribution in the fMRI measurements by estimating the degree of locality. Proceedings of the IEEE Engineering in Medicine and Biology, doi: 10.1109/EMBC.2013.6611111.

Fırat, O., Özay, M., Önal, I., Öztekin, I., & Yarman Vural, F. T. (2013). Representation of cognitive processes using minimum spanning tree of local meshes. Proceedings of the IEEE Engineering in Medicine and Biology, doi: 10.1109/EMBC.2013.6611113.

Önal, I., Özay, M., Fırat, O., Öztekin, I., & Yarman Vural, F. T. (2013). Lokalite derecesinin kestirimiyle fMRG ölçümlerindeki bilgi dağılımının analizi. Proceedings of the IEEE Signal Processing and Communications Applications, doi: 10.1109/SIU.2013.6531437.

Fırat, O., Özay, M., Önal, I., Öztekin, I., & Yarman Vural, F. T. (2013). Yerel örgülerin minimum yayılan ağaçları ile bilişsel süreç betimleme. Proceedings of the IEEE Signal Processing and Communications Applications, doi: 10.1109/SIU.2013.6531524.

Fırat, O., Özay, M., Önal, I., Karagöz, B., Öztekin, I., & Yarman Vural, F. T. (2012). Beyin datası modellemesinde örgü öğrenme yaklaşımı. Proceedings of the IEEE Signal Processing and Communications Applications, doi:10.1109/SIU.2012.6204798.

Peer-Reviewed Abstracts

Öztekin, I., Finlayson, M., Graziano, P., & Dick, A. S. (2020). Predictive modeling of ADHD diagnostic category using cognitive and neurobiological measures of executive function. Poster presented at the annual meeting of the Flux Society.

Öztekin, I., Graziano, P., & Dick, A. S. (2020). Microstructure in the posterior parietal cortex supports working memory function in 9-10-year-old children. Poster presented at the 27th annual meeting of Cognitive Neuroscience Society, Boston, Massachusetts, USA.

Mızrak, E., Singmann, H., & Öztekin, I. (2017). Dissociable neural and behavioral patterns of proactive interference for emotion and neutral information in working memory. Poster presented at the 24th annual meeting of Cognitive Neuroscience Society, San Francisco, California, USA.

Mızrak, E., Öztekin, I. (2016). Forgetting emotional material in working memory. Poster presented at the 57th annual meeting of Society for Neuroscience, San Diego, California, USA.

Mızrak, E., Öztekin, I. (2016). Impact of emotion on recall dynamics in the presence of interference. Poster presented at the 57th annual meeting of Psychonomic Society, Boston, Massachusetts, USA.

Mızrak, E., Öztekin, I. (2016). Modeling the relationship between emotion and forgetting. Paper presented at TeaP 2016, Heidelberg, Germany.

Mızrak, E., Singman, H. & Öztekin, I. (2015). A Bayesian discrete-state model for working memory. Poster presented at the 56th annual meeting of Psychonomic Society, Chicago, Illinois, USA. Finalist for APA Division 3 Best Poster Award.

Mızrak, E., Erhan, C., Balcı, F. & Öztekin, I. (2015). Trait anxiety effects on the control of proactive interference in working memory. Poster presented at the 56th annual meeting of Psychonomic Society, Chicago, Illinois, USA.

Mızrak, E. & Öztekin, I. (2015). Relationship between emotion and forgetting. Poster presented at the International Convention of Psychological Science, Amsterdam, Netherlands.

Kılıç, A. & Öztekin, I. (2014). Testing slows item recognition: Evidence from time course of output interference. Poster presented at the 55th annual meeting of Psychonomic Society, Long Beach, California.

Mızrak, E. & Öztekin, I. (2014). Impact of working memory capacity on temporal order memory retrieval. Poster presented at the 55th annual meeting of Psychonomic Society, Long Beach, California.

Kılıç, A., Sayalı, C. & Öztekin, I. (2014). Aging slows recovery of temporal order information from working memory. Poster presented at the 7th European Working Memory Symposium, Edinburgh, United Kingdom.

Kılıç, A. & Öztekin, I. (2014). A Bayesian analysis of speed-accuracy trade-off data. Poster presented at the 47th annual meeting of the Society for Mathematical Psychology, Ontario, Canada.

Mızrak, E. & Öztekin, I. (2013). Impact of emotion on interference resolution in working memory. Poster presented at the 54th annual meeting of Psychonomic Society, Toronto, Canada.

Kılıç, A. & Öztekin, I. (2013). A time course analysis of the strength based mirror effect. Paper presented at the 54th annual meeting of Psychonomic Society, Toronto, Canada.

Kılıç, A. & Öztekin, I. (2013). Modeling speed-accuracy trade-off curves. Poster presented at the 46th

annual meeting of the Society for Mathematical Psychology, Potsdam, Germany.

Barredo, J.L., Averill, W.R., Öztekin, I., & Badre, D. (2011). Network dynamics supporting the cognitive control of memory retrieval. Poster presented at the 41st annual meeting of Society for Neuroscience, Washington, DC.

Öztekin, I., Güngör, Z.N., & Badre, D. (2011). Impact of aging on the dynamics of short-term memory retrieval: A time-course analysis. Poster presented at the 52nd annual meeting of Psychonomic Society, Seattle, Washington.

Özay, M., Öztekin, U., Öztekin, I. & Yarman Vural, F. (2011). Modeling cognitive processes using machine learning techniques. Poster presented at the 4th annual meeting of INCF Neuroinformatics Congress, Boston, Massachusetts.

Öztekin, I., McShane, L., & Badre, D. (2011). Evaluation and adjustment of control strategies during proactive interference resolution. Poster presented at the 18th annual meeting of the Cognitive Neuroscience Society, San Francisco, California.

Barredo, J., Öztekin, I., & Badre, D. (2010). Prefrontal-medial temporal lobe interactions supporting the cognitive control of episodic retrieval. Poster presented at the 40th annual meeting of Society for Neuroscience, San Diego, California.

Öztekin, I., & Badre, D. (2010). Changes in distributed patterns of neural activation associated with proactive resolution in working memory. Paper presented at the 17th annual meeting of the Cognitive Neuroscience Society, Montreal, Canada.

Öztekin, I., & Badre, D. (2009). Distinct contributions of the medial temporal lobe and the left ventrolateral prefrontal cortex to memory retrieval. Poster presented at the Charles River Association for Memory meeting, Boston, Massachusetts.

Long, N.M., Öztekin, I., & Badre, D. (2009). An fMRI investigation of the neural mechanisms that support free recall. Poster presented at the 39th annual meeting of the Society for Neuroscience, Chicago, Illinois.

Öztekin, I., & Badre, D. (2009). Distinct contributions of the medial temporal lobe and the left ventrolateral prefrontal cortex to memory retrieval. Poster presented at the 39th annual meeting of the Society for Neuroscience, Chicago, Illinois.

Öztekin, I., Long, N.M., & Badre, D. (2008). Distinguishing events during free recall with fMRI. Poster presented at the 16th annual meeting of the Cognitive Neuroscience Society, San Francisco, California.

Öztekin, I., & McElree, B. (2008). Relationship between working memory capacity measures and the time-course of short-term item recognition. Poster presented at the 49th annual meeting of Psychonomic Society, Chicago, Illinois.

Öztekin, I., Curtis, C., McElree, B. (2008). Medial temporal lobe and the left inferior frontal gyrus jointly support interference resolution in verbal working memory. Poster presented at the 15th annual meeting of the Cognitive Neuroscience Society, San Francisco, California.

Öztekin, I., McElree, B., Staresina, B., & Davachi, L. (2007). The role of the hippocampus and LIFG in working memory retrieval. Poster presented at the 48th annual meeting of Psychonomic Society, Long Beach, California.

Öztekin, I., McElree, B., Staresina B., & Davachi, L. (2006). Isolating the focus of attention from memory representations: Evidence from two distinct working memory paradigms. Poster presented at the 36th annual meeting of Society for Neuroscience, Atlanta, Georgia.

McElree, B. & Öztekin, I. (2005). Retrieval dynamics of proactive interference: PI slows retrieval by eliminating fast assessments of familiarity. Paper presented at the 46th annual meeting of the Psychonomic Society, Toronto, Canada.

Additional Education & Training

Post-Doctoral Research Associate, Department of Cognitive and Linguistic Sciences, Brown University, 2008-2010

Editorships & Editorial Review Boards

Guest Associate Editor, Frontiers in Human Neuroscience

Research Grants

Graziano, P. (PI), Dick, A. (PI), Öztekin, I. (Co-I), Finlayson, M. (Co-I). “Biosignatures of executive function and emotion regulation in young children with ADHD”. R01MH112588-02 Computational Administrative Supplement (NIH), 2019-2021.

Öztekin, I. (PI). Cognitive mechanisms that lead to age related memory deficits. European Commission FP7 Marie Curie International Reintegration Grant, 2011-2015.

Öztekin, I. (PI). Individual differences in working memory capacity. Scientific and Technological Research Council of Turkey, 2011-2014.

Vural, F. T. (PI); Öztekin, I. (Co-I). Local networks for modeling and classification of brain activity during cognitive processing. Scientific and Technological Research Council of Turkey, 2013-2016.

Vural, F. T. (PI); Öztekin, I. (Co-I); Gillam, W. D. (Co-I). Multi-layered cognitive learning model. Scientific and Technological Research Council of Turkey, 2014-2016.

Peer Reviews

American Journal of Psychology

Brain Research

Cerebral Cortex

Hippocampus

Human Brain Mapping

Journal of Cognitive Neuroscience

Journal of Experimental Psychology: General

Journal of Experimental Psychology: Learning, Memory, and Cognition

Journal of Memory and Language

Journal of Neurophysiology

Memory & Cognition

NeuroImage

Neuron

Psychonomic Bulletin & Review

Quarterly Journal of Experimental Psychology