

# Aytaç Karabay

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## EXPERIENCE

### Research Experience

**Postdoctoral Researcher**, New York University, Abu Dhabi, UAE, 2022-2025

Supervisor: dr. Daryl Fougne

**Postdoctoral Researcher**, University of Groningen, Groningen, NL, 2019-2022

Project: *Hidden brain states underlying efficient representations in working memory*

Supervisor: prof. Elkan G. Akyürek

Grant Source: Open Research Area

**Research Assistant**, CUNY-Brooklyn College, New York, USA, 2014-2015

Supervisor: dr. Daniel Kurylo

Position: Volunteer laboratory assistant in animal-vision psychophysics laboratory.

### Teaching Experience

New York University Abu Dhabi:

2023, Introduction to Psychology, Teaching assistant

2023, Thinking, Teaching assistant

University of Groningen:

2021; 2022, Cognition and Attention, Guest lecturer

2018-2019, Academic Skills, Lecturer

2017-2018, Honors Research Practicum, Mentor

### Editorial Experience

**Junior editor**, Journal of Experimental Psychology: Human perception and performance, US, 2023-2024

Supervisor: prof. Isabel Gauthier

## EDUCATION

**Ph.D., Cognitive Neuroscience**, University of Groningen, Groningen, NL, 2020

Dissertation: *From Stimulus to Representation: Target Identification in Rapid Serial Visual Presentation*

Promotors: prof. Elkan G. Akyürek, prof. Monique M. Lorist

**M.A., Experimental Psychology**, CUNY-Brooklyn College, New York, USA, 2015

Dissertation: *Perceptual Grouping by Orientation Coherence*

Supervisor: dr. Daniel D. Kurylo

**B.A., Psychology**, Ankara University, Ankara, TR, 2011

Dissertation: *Differences Between Voluntary and Involuntary Autobiographical Memories*

Supervisor: prof. Nurhan Er

## PUBLICATIONS

### Preprints and submitted papers

Kandemir, G.\*, Wolff, M. J. \*, **Karabay, A.**, Stokes, M. G., Axmacher, N., & Akyürek, E. G. (2022, October 29).

Concurrent maintenance of both veridical and transformed working memory representations.

<https://doi.org/10.1101/2022.10.28.514218>

Wang, S., **Karabay, A.**, Akyürek, E. G. (2022, September 18). Which visual working memory model accounts best for target representation in the attentional blink? <https://doi.org/10.1101/2022.09.15.508098>

Fougnie, D. L., **Karabay, A.**, Alvarez, G., & Brady, T. F. (2022, July 14). If at first you don't succeed, try, try again: Second chances reveal more information in working memory. <https://doi.org/10.31234/osf.io/evqtn>

### **Journal Articles**

Altınok, A., **Karabay, A.**, Balta, G, de Jonge, J., & Akyürek, E.G. (2023). The effects of gamma-aminobutyric acid (GABA) on working memory and attention: A randomised, double-blind, placebo-controlled, crossover trial. *Journal of Psychopharmacology*. [in press]

Chen, I. Y., **Karabay, A.**, Mathôt, S., Bowman, H., & Akyürek, E. G. (2023). Concealed identity information detection with pupillometry in rapid serial visual presentation. *Psychophysiology*, 60(1). 1-14. doi:10.1111/psyp.14155

Altınok, A., **Karabay, A.**, & Akyürek, E. G. (2022). Acute effects of cocoa flavanols on visual working memory: Maintenance and updating. *European Journal of Nutrition*, 61(3), 1665–1678. doi: 10.1007/s00394-021-02767-x

**Karabay, A.**, Wilhelm, S. A., de Jonge, J., Wang, J., Martens, S., & Akyürek, E. G. (2022). Two faces of perceptual awareness during the attentional blink: Gradual and discrete. *Journal of Experimental psychology: General*, 151(7), 1520–1541. doi:10.1037/xge0001156

Karataş, O., **Karabay, A.**, & Alici, T. (2022). The effects of long-term cocoa flavanols intake on cognitive functions and mood, and the physiological mechanisms underlying these effects: A literature review. *Turkish Psychological Articles*, 25(49). 1–26. doi: 10.31828/tpy1301996120211203m000043.

**Karabay, A.**, & Kurylo, D. D. (2020). Discriminating global orientation of two element sets. *Journal of Cognition*, 3(1), 1-13. doi:10.5334/joc.127

**Karabay, A.**, & Akyürek, E. G. (2019). Temporal integration and attentional selection of color and contrast target pairs in rapid serial visual presentation. *Acta Psychologica*, 196, 56–69. doi:10.1016/j.actpsy.2019.04.002

**Karabay, A.**, Saija, J. D., Field, D. T., & Akyürek, E. G. (2018). The acute effects of cocoa flavanols on temporal and spatial attention. *Psychopharmacology*, 235(5), 1497–1511. doi:10.1007/s00213-018-4861-4

**Karabay, A.**, & Akyürek, E. G. (2017). The effects of Kanizsa contours on temporal integration and attention in rapid serial visual presentation. *Attention, Perception, & Psychophysics*, 79(6), 1742–1754. doi:10.3758/s13414-017-1333-6

### **Book Chapters**

**Karabay, A.** (2022). Duyum ve Algı (Sensation and Perception). In . G. ZEREN (Eds.), *Fizyolojik Psikoloji (Physiological Psychology)* (pp. 203–233). Eğiten Kitap. Ankara, Turkey.

Cotton, R. (2013). *Learning R* (Sünbül, Ö., Sünbül, S. Ö., & **Karabay, A.**, Trans). Pegem Press. İstanbul, Turkey.

## **PRESENTATIONS**

### **Talks**

#### ***Invited Talks***

**Karabay, A.** (2022, August). Taking a snapshot of the brain: Visual impulse reveals (non)persistent neural activity by perturbation and increasing signal-noise ratio. Ghent University in Gent, Belgium.

#### ***Conference Talks***

Akyürek, E. G., Kandemir, G., Wolff, M., **Karabay, A.**, & Wilhelm, S. (2022, August). Probing latent working memory representations in EEG. Oral session presented at the 22st Conference of the European Society for Cognitive Psychology (ESCoP) in Lille, France.

Chen, I., Buchel, P., **Karabay, A.**, Mathôt, S., & Akyürek, E. G. (2022, August). Concealed familiar face detection with pupillometry in rapid serial visual presentation. Oral session presented at the 22st Conference of the European Society for Cognitive Psychology (ESCoP) in Lille, France.

Wang, S., **Karabay, A.**, & Akyürek, E. G. (2022, August). Which working memory model accounts best for target representation during the attentional blink? Oral session presented at the 22st Conference of the European Society for Cognitive Psychology (ESCoP) in Lille, France.

**Karabay, A.**, Wolff, M. J., Ruuskanen, V., & Akyürek, E. G. (2022, May). A visual impulse reveals memoranda embedded in functional connectivity: Evidence for activity-silent WM states. Oral session presented at the symposium *Interactions between sensory representations and cognitive control in working memory* at the International Conference of Cognitive Neuroscience 2020 in Helsinki, Finland.

**Karabay, A.**, Wang, J., Wilhelm, S., Martens, S., & Akyürek, E. G. (2019, December). Two faces of the Attentional Blink: Gradual and discrete loss of perceptual awareness. Oral session presented at the 17th NVP Winter Conference in Egmond, Netherlands.

**Karabay, A.**, Wang, J., Martens, S., & Akyürek, E. G. (2019, September). The Attentional Blink: Binary Or Gradual? Oral session presented at the 21st Conference of the European Society for Cognitive Psychology (ESCoP) in Tenerife, Spain.

Kandemir, G., **Karabay, A.**, & Akyürek, E. G. (2019, September). Decoding Sensory and Abstract Information From Activity Silent Brain States. Oral session presented at the 21st Conference of the European Society for Cognitive Psychology (ESCoP) in Tenerife, Spain.

**Karabay, A.**, Saija J., Field, D. T., & Akyürek, E.G. (2017, December). The Acute Effects of Cocoa Flavanols on Temporal and Spatial Attention. Oral session presented at the winter conference 2017 of De Nederlandse Vereniging voor Psychonomie in Egmond, Netherlands.

Er N., **Karabay, A.**, Kaynar, G., Uysal, M. M., & Boyraz, F. U. (2012, May). İstemli & İstemsiz Otobiyografik Anılarda Yaşa Bağlı Değişimler (Variations of Voluntary and Involuntary Autobiographical Memories Depending on Age). Oral Session presented at the 17th National Psychology Congress in Istanbul, Turkey.

**Karabay, A.**, & Çakmak, M.A. (2009, July). Engellenme Karşısında Verilen Tepkiler İle Kişilik Tiplerinin Ve Yükleme Çeşitlerinin İlişkisi (The Relationship between Frustration Responses, Personality Types, and Attribution). Oral session presented at the 14th Ulusal Psikoloji Öğrencileri Kongresi (14th National Conference of Psychology Students) in Istanbul, Turkey.

## **Posters**

**Karabay, A.\***, Kandemir, G.\*, Kovács, E.R., & Akyürek, E.G. (2022, August). Pinging attentional task rules: Neural mechanisms underlying attending and suppressing in visual search tasks. Poster session presented at the 22st Conference of the European Society for Cognitive Psychology (ESCoP) in Lille, France.

Altınok, A., **Karabay, A.**, Lorist, M. M., Weiden, D., & Akyürek, E.G. (2022, August). The Acute Effects of Caffeine and Cocoa Flavanols on Working Memory and Attention. Poster session presented at the 22st Conference of the European Society for Cognitive Psychology (ESCoP) in Lille, France.

Chen, I., Buchel, P., **Karabay, A.**, Mathôt, S., Bowman, H., & Akyürek, E. G. (2022, May). Concealed information detection with pupillometry in rapid serial visual presentation. Poster Session presented at the the International Conference of Cognitive Neuroscience 2020 in Helsinki, Finland.

**Karabay, A.**, Wolff, M. J., Ruuskanen, V., & Akyürek, E. G. (2022, April). Visual impulse perturbation: Neural sonar or just noise-reducer? Poster Session presented at the 18th NVP Winter Conference in Egmond, Netherlands.

Chen, I., **Karabay, A.**, Mathôt, S., Bowman, H., & Akyürek, E. G. (2022, April). Concealed identity information detection with pupillometry in rapid serial visual presentation. Poster Session presented at the 18th NVP Winter Conference in Egmond, Netherlands.

Wang, S., **Karabay, A.**, & Akyürek, E. G. (2022, April). Which working memory model accounts best for target representation in the attentional blink? Poster Session presented at the 18th NVP Winter Conference in Egmond, Netherlands.

Altınok, A., Balta, G., **Karabay, A.**, & Akyürek, E. G. (2022, April). The effects of gamma-aminobutyric acid (GABA) on working memory and attention. Poster Session presented at the 18th NVP Winter Conference in Egmond, Netherlands.

Kandemir, G., **Karabay, A.**, & Akyürek, E. G. (2019, December). Seeing double? Activity-silent maintenance of mental rotation products and their originals. Poster Session presented at the 17th NVP Winter Conference in Egmond, Netherlands.

Altınok, A., **Karabay, A.**, & Akyürek, E. G. (2019, September). The Acute Effects Of Cocoa Flavanols On Visual Working Memory. Poster session presented at the 21st Conference of the European Society for Cognitive Psychology (ESCoP) in Tenerife, Spain.

Kandemir, G., **Karabay, A.**, & Akyürek, E. G. (2019, February). Decoding Visual Working Memory Before and After Mental Operations. Poster Session presented at the BCN Winter Meeting in Twente, Netherlands.

**Karabay, A.**, & Akyürek, E. G. (2018, May). Target Color and Contrast Influences Temporal Attention in Rapid Serial Visual Presentation. Poster Session presented at the International meeting of the Psychonomics Society in Amsterdam, Netherlands; (2017, September). Poster Session presented at the 20th Conference of the European Society for Cognitive Psychology (ESCoP) in Potsdam, Germany; (2017, August). Poster Session presented at the 40th European Conference on Visual Perception (ECPV) in Berlin, Germany.

**Karabay, A.**, & Akyürek, E. G. (2017, April). Kanizsa Effects on Temporal Integration and Attention. Poster session presented at the Heymans Symposium in Groningen, Netherlands.

**Karabay, A.**, & Kurylo, D.D. (2015, May). Perceptual Grouping by Orientation Coherence. Poster Session presented at the Science Day, Brooklyn College in NY, the US.

Er, N., **Karabay, A.**, Kaynar, G., Uysal, M. M., & Boyraz, F. U. (2012, April). Autobiography Of Aging Mind: Age-Related Effects On Voluntary And Involuntary Autobiographical Memories. Poster Session presented at the IX International Cognitive Neuroscience Meeting in Istanbul, Turkey.

### **SUPERVISED MASTER THESES**

- Ruuskanen, V. (2022). *Investigating the functionality of visual impulses in decoding working memory using matching and non-matching impulse stimuli*. University of Groningen, NL.
- Bapoğlu, O. A. (2021). *Pinging individual features of multi-feature objects: an EEG study*. University of Groningen, NL.

### **RELEVANT SKILLS**

**Technical skills:** JASP (*advanced*); SPSS (*advanced*); R (*advanced*); Matlab (*moderate/advanced*); Python (*moderate/advanced*); OpenSesame (*advanced*); E-prime (*advanced*); MS Office (*advanced*); Memory modeling; EEG; Multivariate Pattern Analysis; GitHub; Classification; WordPress

**Language Skills:** Turkish (*native*); English (*professional*); Dutch (*beginner*)

### **GRANTS & FELLOWSHIPS**

- *YLSY Scholarship* from Ministry of National Education, Turkey (2011-2019). Complete coverage of tuition, stipend, and partial coverage of research costs for masters and Ph.D. degrees (200.000\$).

### **AWARDS**

- Open Research award for the study '*Concealed familiar face detection with pupillometry in rapid serial visual presentation*', by Open Science Programme, University of Groningen, Groningen, the Netherlands, 2022.

- Best poster presentation award in *Searching for the Working Memory Engram* workshop with the presentation titled *A visual impulse reveals memoranda embedded in functional connectivity: Evidence for activity-silent WM states*, Groningen, the Netherlands, 2022.

### **ORGANIZED WORKSHOP & SEMINARS**

- *Searching for the Working Memory Engram* – University of Groningen, NL, 2022. Organized an international hybrid workshop with prof. Elkan G. Akyürek.
- *Introduction to Python/OpenSesame* – Leibniz Institute for Psychology, DE, 4-7/08/2020: Worked as a tutor for the workshop by dr. Sebastiaan Mathôt. Topics: Introduction to Python/Numerical Python, Introduction to OpenSesame, Advanced numerical Python, Building online experiment, Collecting data, Analyzing with Python.
- *Mindwise Science Communication Workshop* – University of Groningen, NL, (I) 04-05/2019; (II) 01/12/2020: “Writing in a conversational style / Academic writing vs. blogging”.

### **ORGANIZATIONAL EXPERIENCE**

- *Ph.D. and Postdoc Representative*, Department of Experimental Psychology, University of Groningen, NL, 2021-2022.
- *Mind-wise Science Communication Ph.D. Committee*, University of Groningen, NL, 2018-2021.
- *Psychology Ph.D. Council Member*, University of Groningen, NL, 2016-2019.

### **SELECTED CERTIFICATES**

- *Teaching and Mentoring in Academic Learning Communities*, Teaching Unit Psychology of University of Groningen, Groningen, NL, 2018.
- *Multivariate pattern analyses (MVPA) in EEG/MEG*, Experimenteel-Psychologische Onderzoekschool, Amsterdam, NL, 2018.
- *Autumn school: Attention*, Experimenteel-Psychologische Onderzoekschool, Amsterdam, NL, 2018.