

Ivan Grahek

Curriculum Vitae

Department of Cognitive and Psychological Sciences
Brown University
190 Thayer St
Providence, RI, USA

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Education and training

- 2026 - Research Associate, Brown University
- 2024 - 2026 Postdoctoral Scholar, University of California, Berkeley
- 2020 - 2024 Postdoctoral Research Associate, Brown University
- 2015 - 2019 PhD in Psychology, Ghent University
Thesis: *Motivation and Cognitive Control in Depression*
- 2014 - 2015 M.A. in Psychology, University of Belgrade
- 2010 - 2014 B.A. in Psychology, University of Belgrade

Grants and awards

- 2026 Association for Psychological Science (APS) Rising Star Award
- 2025 Institute of Cognitive and Brain Sciences, University of California Berkeley. Research Grant for the “Neurocomputational mechanisms of action selection in dynamically changing environments” pilot project (**\$4,000**).
- 2022 Sloan Nomis Summer School on the Cognitive Foundations of Economic Behavior. Travel grant (**\$1,350**).
- 2022 Carney Institute for Brain Science, Brown University for the organization of the advanced training program entitled “Mental Effort: One Construct, Many Faces?”. (**\$5,000**).
- 2022 William K. and Katherine W. Estes Fund for the advanced training program entitled “Mental Effort: One Construct, Many Faces?”. Association for Psychological Science and the Psychonomic Society. (**\$13,850**).
- 2021 William K. and Katherine W. Estes Fund for the advanced training program entitled “Mental Effort: One Construct, Many Faces?”. Association for Psychological Science and the Psychonomic Society. (**\$4,080**).
- 2021 European Commission (Horizon 2020) Seal of Excellence for the Marie Skłodowska-Curie project titled *Neurocomputational Mechanisms of Learning and Generalizing the Value of Cognitive Control*.

- 2018 Ghent University – Funding for organizing a graduate-level three-day course entitled: “Introduction to Bayesian Statistical Modelling” 13th-15th of June 2018. **(1,900€)**
- 2018 Research Foundation - Flanders (FWO) – travel grant for the stay at the lab of Dr. Amitai Shenhav at Brown University, Providence, RI, USA, 1st of September – 31st of December 2018. **(6,732€)**
- 2018 Research Foundation - Flanders (FWO) – travel grant for the participation at the Annual conference of the Society for the Improvement of Psychological Science, Grand Rapids, Michigan, USA, 24-26 June, 2018. **(1,000€)**
- 2017 Research Foundation - Flanders (FWO) – travel grant for the participation at the Anxiety and Depression Conference, San Francisco, California, USA, 6-9 April, 2017. **(1,000€)**
- 2015 - 2019 BOF Special Research Fund (Ghent University) – grant for the PhD project “Cognitive, emotional, and motivational processes in relation to depressive symptoms” with Dr. Ernst Koster and Dr. Ruth Krebs as supervisors. **(106,880€)**
- 2014 Borislav Lorenc grant (University of Belgrade) for young researchers in cognitive sciences – used for a research visit to PANLAB at the Department of Experimental Clinical and Health Psychology, Ghent University **(1,500€)**

Publications

Preprints

Grahek, I., Leng, X., Fengler, A., & Shenhav, A. (2025). Slower transitions between control states lead to reductions in cognitive flexibility over the lifespan. (*bioRxiv*; under review at *JEP:General*).

Liao, J., Verschooren, S., **Grahek, I.**, Mo, L., & Pourtois, G. (2024). Value-driven Attentional Capture is Stronger for Internal than External Stimuli. *PsyArXiv*

Peer-reviewed journal articles

Grahek, I., Leng, X., Musslick, S., & Shenhav, A. (2025). Control adjustment costs limit goal flexibility: Empirical evidence and a computational account. *Psychological Review*.

Bustamante, L. A., Barch, D. M., Solis, J., Oshinowo, T., **Grahek, I.**, Konova, A. B., ... & Cohen, J. D. (2024). Major depression symptom severity associations with willingness to exert effort and patch foraging strategy. *Psychological medicine*, 54(15), 4396-4407.

Wang, N., Verschooren, S., Vermeylen, L., **Grahek, I.**, & Pourtois, G. (2025). Hypervigilance strikes a balance between external and internal attention: behavioral and modeling evidence from the switching attention task. *Psychological Research*. 89 (1).

Grahek, I., Frömer, R., Prater Fahey, M., & Shenhav, A. (2023). Learning when effort matters: neural dynamics underlying updating and adaptation to changes in performance efficacy. *Cerebral Cortex*, 33(5), 2395-2411.

Koster, E. H., Marchetti, I., & Grahek, I. (2022). Focusing inward: A timely yet daunting challenge for clinical psychological science. *Psychological Inquiry*, 33(4), 273-275.

*Hoofs, V., ***Grahek, I.**, Boehler, C. N., & Krebs, R. M. (2022). Guiding spatial attention by multimodal reward cues. *Attention, Perception, & Psychophysics*, 1-16.

***I.G. co-first author**

Grahek, I., Schettino, A., Koster, E. H. W., & Andersen, S. K. (2021). Dynamic interplay between reward and voluntary attention determines stimulus processing in visual cortex. *Journal of Cognitive Neuroscience*. 33(11), 2357–2371.

Shenhav, A., Prater Fahey, M., & **Grahek, I.** (2021). Decomposing the motivation to exert mental effort. *Current Directions in Psychological Science*. 30(4), 307-314.

Grahek, I., Schaller, M., & Tackett, J. L. (2021). Anatomy of a Psychological Theory: Integrating Construct Validation and Computational Modeling Methods to Advance Theorizing. *Perspectives on Psychological Science*. 16(4), 803-815.

Grahek, I., Musslick, S., & Shenhav, A. (2020). A Computational Perspective on the Roles of Affect in Cognitive Control. *International Journal of Psychophysiology*. 151, 25-34.

Grahek, I., Shenhav, A., Musslick, S., Krebs, R. M., & Koster, E. H. (2019). Motivation and cognitive control in depression. *Neuroscience & Biobehavioral Reviews*, 102, 371-381.

Klein, R. A., Vianello, [...], **Grahek, I.**, [...], & Nosek, B. A. (2018). Many labs 2: Investigating variation in replicability across samples and settings. *Advances in Methods and Practices in Psychological Science*, 1(4), 443-490.

Marchetti, I., Shumake, J., **Grahek, I.**, & Koster, E. H. (2018). Temperamental factors in remitted depression: The role of effortful control and attentional mechanisms. *Journal of Affective Disorders*. 235, 499-505.

Grahek, I., Everaert, J., Krebs, R. M., & Koster, E. H. (2018). Cognitive control in depression: Toward clinical models informed by cognitive neuroscience. *Clinical Psychological Science*, 6(4), 464-480.

*Everaert, J., ***Grahek, I.**, Duyck, W., Van den Bergh, N., Buelens, J. & Koster, E. (2017). Mapping the interplay among cognitive biases, emotion regulation, and depressive symptoms. *Cognition & Emotion*. 31(4), 726-735.

***I.G. co-first author**

*Everaert, J., ***Grahek, I.**, & Koster, E. (2017). Individual differences in cognitive control over emotional material modulate cognitive biases linked to depressive symptoms. *Cognition & Emotion*. 31(4), 736-746.

***I.G. co-first author**

Orlić, A., **Grahek, I.**, & Radović, T. (2014). The influence of valence and arousal on reasoning: Affective priming in the semantic verification task. *Psihologija*, 47(2), 201-213.

Peer-reviewed conference articles

Grahek, I., Ashok A. K., Kikumoto, A., Serre, T., Frank M. J. (2024). Reinforcement-Based Control of Information Processing in Recurrent Neural Networks Produces Optimal Speed-Accuracy Tradeoff. *Conference on Cognitive Computational Neuroscience*. Boston, USA.

Grahek, I., Leng, X., Musslick, S., & Shenhav, A. (2023). The Cost of Adjusting Cognitive Control: A Dynamical Systems Approach. *Conference on Cognitive Computational Neuroscience*. Oxford, UK.

Grahek, I., Leng, X., Prater Fahey, M., Yee, D., & Shenhav, A. (2022). Empirical and Computational Evidence for Reconfiguration Costs During Within-Task Adjustments in Cognitive Control. In *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*. Toronto, CA.

Huang, H., **Grahek, I.**, Bustamante, L., Daw, N., Caplin, A., & Musslick, S. (2022). Leveraging psychometrics of rational inattention to estimate individual differences in the capacity for cognitive control. In *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*. Toronto, CA.

Invited talks

- November, 2024 UC Berkeley, Department of Psychology, *Cognitive Science Seminar*
Title: "Control adjustment costs limit goal flexibility: Empirical evidence and a computational account"
- March, 2024 Washington University in St. Louis, Department of Psychology, *Connections with Control meeting*
Title: "The Cost of Adjusting Cognitive Control: A Dynamical Systems Approach"
- March, 2024 Leibniz Research Centre for Working Environment and Human Factors, Dortmund Germany, *Colloquium Series University*
Title: "Cognitive Control Dynamics: Neural and Computational Mechanisms of Flexible Goal Engagement"
- August, 2023 Ghent University, Department of Experimental Psychology
Title: "Cognitive Control Dynamics: How Motivation and Learning Guide Effort Allocation"
- March, 2022 Princeton Neuroscience Institute (P6 meeting)
Title: "Empirical and Computational Evidence for Reconfiguration Costs During Within-Task Adjustments in Cognitive Control"
- July, 2020 Mental Effort: One Construct, Many Faces? Workshop at the 42nd Annual Meeting of the Cognitive Science Society (virtual meeting)
Title: "Individual differences in the allocation of mental effort"
- November, 2020 Transcontinental Computational Psychiatry Workgroup (TCPW).
Title: "Cognitive control impairments in depression"
- November, 2019 Seminars series of the Center for Brain and Cognition, Pompeu Fabra University, Barcelona, Spain.
Title: "The role of motivation in healthy and disordered cognitive control"
- September, 2019 Expert meeting: "Innovative interventions in depression combining cognitive interventions and noninvasive brain stimulation", Ghent University
Title: "Motivation and cognitive control in depression"
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Conference presentations (talks)

Grahek, I. (2025). Towards Emotion Regulation Dynamics: A View from Cognitive Control Optimization. Annual Conference of the Society for Affective Science. Portland, USA, March 20-23, 2025.

Grahek, I., Leng, X., Musslick, S., Bonin, A., & Shenhav, A. (2024), Control adjustment costs limit goal flexibility: Empirical evidence and a computational account. Society for Neuroscience Conference (SfN 2024). Chicago, USA, October 5-9, 2024.

Grahek, I. & Shenhav, A. (2023), Neural Dynamics Underlying Updating and Adaptation to Changes in Performance Efficacy. Cognitive Neuroscience Society conference (CNS 2023). San Francisco, USA, March 25-29, 2023.

Grahek., I., Leng, X., Prater Fahey, M., Yee, D., & Shenhav, A. (2022). Empirical and Computational Evidence for Reconfiguration Costs During Within-Task Adjustments in Cognitive Control. Cognitive Neuroscience Society (CNS 2022). San Francisco, 23-26 April, 2022.

Grahek., I., Leng, X., Prater Fahey, M., Yee, D., & Shenhav, A. (2022). Empirical and Computational Evidence for Reconfiguration Costs During Within-Task Adjustments in Cognitive Control. 44th Annual Meeting of the Cognitive Science Society. Toronto, July 28-30, 2022.

Grahek, I., Musslick, S., & Shenhav, A. (2019). The Role of Affect in Cognitive Control: A Computational Approach and its Relevance for Depression. Talk presented at the Annual Conference of the International Society for Research on Emotion, Amsterdam, July 10-13, 2019.

Grahek, I. (2019). The Role of Theory Strength in the Replicability Crisis. Talk presented at International Convention of Psychological Science (ICPS), Paris, March 7-9, 2019.

Grahek, I. (2018). The Day After Methods are Fixed: Pervasive Problems of Weak Theories. Talk presented at the Annual conference of the Society for the Improvement of Psychological Science, Grand Rapids, Michigan, USA, 24-26 June, 2018.

Grahek, I., Everaert, J., & Koster, E.H.W. (2017). Cognitive Control Over Emotional Material Modulates Cognitive Biases Linked to Depressive Symptoms. Talk presented at the Anxiety and Depression Conference, San Francisco, California, USA, 6-9 April, 2017.

Grahek, I., Everaert, J., Duyck, W., Van den Bergh, N., Buelens, J. & Koster, E. (2016). Mapping the interplay among cognitive biases, emotion regulation, and depressive symptoms. Talk presented at the CERE Emotion Conference. Leiden, 6-7 June 2016.

Petrović, S. & **Grahek, I.** (2015). Uticaj afektivne valence i pobudenosti na proces suđenja [The influence of valence and arousal on judgment]. XXI Empirical studies in psychology. Belgrade, 27-29 March, 2015.

Grahek, I., Radović, T., Orlić, A., & Purić, D. (2014). The influence of emotional context on the shifting function: Affective priming in the task-switching paradigm. Rijeka days of experimental psychology. Rijeka: 25-29 September, 2014.

Grahek, I., Radović, T. & Orlić, A. (2013). Uticaj specifičnih emocija na zadatak semantičke verifikacije [Influence of specific emotions on the semantic verification task]. Current Trends in Psychology. Novi Sad, 11-13 October, 2013.

Conference presentations (posters)

Grahek, I., Leng, X., Kikumoto, A., Bonin, A., & Shenhav, A. (2025). Decoding Cognitive Control Dynamics: Neural Evidence of Inertia in Cognitive Control Adjustments. Cognitive Neuroscience Society (CNS 2025). Boston, USA, March 29 – April 1, 2025.

Dong, Y, **Grahek, I.**, Straub, D., Kikumoto, A., & Shenhav, A. (2025). Leveraging Continuous Psychophysics to Investigate Cognitive Control Allocation in Dynamic Environments. Cognitive Neuroscience Society (CNS 2025). Boston, USA, March 29 – April 1, 2025.

Grahek, I., Ashok A. K., Kikumoto, A., Serre, T., Frank M. J. (2024). Reinforcement-Based Control of Information Processing in Recurrent Neural Networks Produces Optimal Speed-Accuracy Tradeoff. *Conference on Cognitive Computational Neuroscience*. Boston, USA, August 5-9, 2024.

Grahek, I., Dong, Y., Ogbaa, A., Kim, J., & Shenhav, A. (2023). Neural circuits underlying learning and adjustment to dynamic changes in the expected value of cognitive control. Society for Neuroscience (SfN 2023), Washington D.C., USA, November 11-15, 2023.

Prater Fahey M., **Grahek I.**, & Shenhav A. (2023). Understanding the developmental trajectory of learning and adjusting to the perceived efficacy of one's efforts. International conference on Motivational and Cognitive Control, Lyon, France, October 11-13, 2023.

Grahek, I., Leng, X., Musslick, S., & Shenhav, A. (2023). The Cost of Adjusting Cognitive Control: A Dynamical Systems Approach. Cognitive Computational Neuroscience Conference (CCN 2023), Oxford, United Kingdom, August 24-27, 2023.

Bustamante, Laura A, Prater Fahey, M., Solis, J., Oshinowo, T., Lee, J. R., Tong, E., Burton, A. R., **Grahek, I.**, Shenhav, A., Barch, D., Konova, A., Daw, N. D., & Cohen, J. D. (2023b). Anxiety in major depression associated with increased willingness to exert cognitive, but not physical effort. 78th Annual meeting of the Society for Biological Psychiatry, San Diego, California, USA, April 27-29th.

Luther, L.,* **Grahek, I.**,* Zhang, L., Ruiz, I., Dean Wolf, C.K., Prater Fahey, M., Shenhav, A., & Strauss, G.P. (2023, May). Deconstructing the Expected Value of Control in Schizophrenia: A Novel Mechanistic Model of Negative Symptoms. Oral presentation accepted for the 2023 Annual Congress of the Schizophrenia International Research Society, Toronto, CA. ***Co-first authors**

Prater Fahey, M., Bustamante, L. A., **Grahek, I.**, Solis, J., Oshinowo, T., Lee, J. R., Tong, E., Burton, A. R., Konova, A., Daw, N. D., Cohen, J. D., & Shenhav, A. (2022). Disentangling the Motivation to Exert Cognitive Control in Depression. Society for NeuroEconomics (SNE 2022), Crystal City, VA, USA, September 30th – October 2nd, 2022.

Grahek, I., Leng, X., Prater Fahey, M., Yee, D., & Shenhav, A. (2022). Empirical and Computational Evidence for Reconfiguration Costs During Within-Task Adjustments in Cognitive Control. Cognitive Neuroscience Society (CNS 2022). San Francisco, 23-26 April, 2022.

Prater Fahey, M., **Grahek, I.**, Dean Wolf, C.K., Placido, D., Orwicz, A., Amso, D., & Shenhav, A. (2020). When is my effort worthwhile? Learned efficacy influences how adolescents allocate cognitive control. Flux Congress 2022, Virtual, 9-12 September, 2020.

Grahek, I., Frömer, R., & Shenhav, A. (2019). Learning whether control matters: neural dynamics underlying the updating of expectations and control allocation in response to changes in performance efficacy. 7th International Symposium on Motivational and Cognitive Control (MCC 2019). Berlin, 16-18 September, 2019.

Grahek, I., Everaert, J., Krebs, R. & Koster, E. (2016). Influence of rewards on depression-related attentional biases. 6th Motivation and Cognitive Control (MCC) Symposium. St Andrews, 24-26 August, 2016.

Grahek, I., Everaert, J., Krebs, R. & Koster, E. (2016). Interactive influences of emotion and motivation on attention in relation to depressive symptom levels. U4 Workshop: “Emotional, attentional and motivational influences on visual perception explored using state of the art neurophysiology and neuroimaging”. Gent, 26-27 May, 2016.

Teaching and mentoring

Teaching

- 2018 Introduction to Bayesian Statistical Modelling (3-day workshop). Ghent University, Belgium, Ghent, 13-15 June, 2018.
- 2011-2015 Teaching assistant for undergraduate courses in Cognition and Perception at the Department of Psychology, University of Belgrade

Mentoring

Graduate thesis students

- 2026- Yuchen Jiang, Department of Applied Mathematics, Brown University. MS thesis in cognitive neuroscience.
- 2022-23 Wanjin Feng Emily, Department of Interior Architecture, Rhode Island School of Design, “Reconnect with Contemporary Art: A New Model for Immersive Multisensory Experiences Exhibition” (external advisor)

Undergraduate thesis students

- 2026- Inna Dmytrivna Habibollahzadeh, University of California, Berkeley
- 2026- Siyuan Liu, Zhejiang University and the University of Edinburgh. Honors thesis (external advisor)
- 2023-2024 Yihuan Dong, Brown University, “Leveraging Continuous Psychophysics to Investigate Cognitive Control Allocation in Dynamic Environments”
*Awarded the Richard E. Whalen Prize for Excellence in Neuroscience and Behavioral Biology
- 2021-22 Selin Baydar, Brown University, “Does your effort matter for avoiding penalties? The role of performance efficacy and penalty in cognitive control allocation”
*Awarded the Cognitive Neuroscience Premium Award for research excellence

Undergraduate research assistants

- 2025- Inna Dmytrivna Habibollahzadeh, University of California, Berkeley
- 2025- Siyuan Liu, Zhejiang University and the University of Edinburgh
- 2024- Hani Jamila Harris, University of California, Berkeley
- 2024- Ella Do Ryan, University of California, Berkeley

2024-2025	Yiming Zhao, University of Amsterdam
2023-2024	Ainsley Bonin (summer student through the Leadership Alliance Program)
2023-2024	W. Ryan Waite, Brown University
2023-2024	Maya Hoffman, Brown University
2023-2024	Rohan Kumaran, Brown University
2022-2025	Yihuan Dong, Brown University & Harvard University
2020-2022	Selin Baydar, Brown University
2021-2022	Maja Nieweglowska, Brown University
2020-2021	Peyton Strong, Brown University

Scientific service

Organization of conferences, workshops, and symposia

Organizer & Chair	Neurocomputational Accounts of Agency. Symposium at the Cognitive Neuroscience Society conference (CNS 2023). San Francisco, USA, March 25-29, 2023.
Program committee	Annual conference of the Society for Affective Science (2023).
Organizer	Mental Effort: One Construct, Many Faces? Workshop supported by the APS & Psychonomic Society W. Estes Fund, The Carney Institute for Brain Science, and the Department of Cognitive, Linguistic, and Psychological Sciences, Brown University. Providence, RI, USA. November 21-22 2022. https://sites.google.com/view/mental-effort/general-information?authuser=0
Organizer	Mental Effort: One Construct, Many Faces? Workshop supported by the APS & Psychonomic Society W. Estes Fund, September 9-10 2021 (online event). https://sites.google.com/view/mental-effort/general-information?authuser=0
Organizer	Mental Effort: One Construct, Many Faces? Annual Conference of the Cognitive Science Society, July 29 th 2020 (online event). https://sites.google.com/view/mental-effort/general-information?authuser=0
Organizer & Chair	The importance of theory and its implications for the replication crisis in psychological research. Symposium conducted at the Annual meeting of the Belgian Association for Psychological Sciences (BAPS), Liege, Belgium, May 14-15, 2019.
Organizer & Chair	The Anatomy of a Psychological Theory. Symposium at the International Convention of Psychological Science (ICPS), Paris, France, March 7-9, 2019.
Organizer	Introduction to Bayesian Statistical Modelling (3-day workshop). Ghent University, Belgium, Ghent, 13-15 June, 2018.

Reviewer – Funding Agencies

Swiss National Science Foundation

Reviewer – Conferences:

Society for Affective Science

Reviewer - Journals:

Clinical Psychology Review – Clinical Psychological Science – Cognition & Emotion – Cognitive, Affective, & Behavioral Neuroscience – Current Opinion in Behavioral Sciences – Emotion – Journal of Abnormal Psychology – Journal of Cognitive Neuroscience – Journal of Experimental Psychology: General – Journal of Neuroscience – Nature Human Behaviour – Nature Neuroscience – Perspectives on Psychological Science – PLOS Computational Biology – PNAS – Psychological Review

Languages

Serbo-Croatian – Native; English – Proficient; French – Intermediate
