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Research Themes

Cognitive & Decision Neuroscience
Mathematical & Cognitive Psychology
Judgment & Decision Making

Research Positions

2018

ERC Principal Investigator, Department of Neurophysiology and Pathophysiology, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany.

2016

2018

Marie Skłodowska-Curie Fellow, Department of Neurophysiology and Pathophysiology, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany.

2015

2016

ISSF Wellcome Trust Career Development Fellow, Department of Psychological Sciences, Birkbeck, University of London, London, UK.

2012

2015

Postdoctoral Research Associate, Department of Experimental Psychology, University of Oxford, Oxford, UK.

Education

2008

2012

PhD Cognitive Science, Cognitive, Perceptual and Brain Department, University College London, London, UK.

supervisor: Professor Nick Chater

2007

2008

MRes Psychology, School of Psychology, Birkbeck, University of London, London, UK.

Passed with distinction

2006

2007

MSc Cognitive Science, School of Informatics, College of Science and Engineering, University of Edinburgh, Edinburgh, UK.

major: Neuroinformatics, minor: Natural Language Processing

2001

2006

BSc Computer Science, Department of Informatics, Athens University of Economics and Business, Athens, Greece.

Fellowships & Grants

- 2018–2023 ERC Starting Grant, ERC-2018-STG (€1,499,345).
2016–2018 Marie Skłodowska-Curie Individual Fellowship, CH2020-MSCA-IF-2014 (€177,599).
2015–2016 Career Development Fellowship, Wellcome Trust (ISSF), Birkbeck (senior scientist salary + £7,000 research budget).
2014–2015 British Academy & Leverhulme Trust, Small Research Grant (£10,000).

Awards

- 2019 Cognitive Computational Neuroscience, Travel Award for highly-ranked submission (\$ 250)
2011 Guarantors of Brain, ICN-UCL, Travel Grant (£800)
2001–2006 A.I.G. Foundation, Institute of International Education, International scholarship program for undergraduate and postgraduate studies (\$ 35,000)

Theses

- 2012 Tsetsos, K. "Information integration in perceptual and value-based decisions". PhD thesis. UCL (University College London).
2008 Tsetsos, K. "Contrasting neurocomputational models of value-based decision making". MRes. Birkbeck College, University of London.
2007 Tsetsos, K. "Optimal noise in ganglion cells". MSc. University of Edinburgh.

Journal Publications

[bold denotes (co-) first or (co-) senior authorship.]

- [J.28] Dumbalska, T., V. Li, K. Tsetsos, and C. Summerfield (2020). "A map of decoy influence in human multi-alternative choice". In: *Proceedings of the National Academy of Sciences*.
[J.27] Gee, J. W. de, K. Tsetsos, L. Schwabe, A. E. Urai, D. McCormick, M. J. McGinley, and T. H. Donner (2020). "Pupil-linked phasic arousal predicts a reduction of choice bias across species and decision domains". In: *eLife* 9. Ed. by J. I. Gold, M. Grüşchow, and R. B. Ebitz, e54014.
[J.26] Luyckx, F., B. Spitzer, A. Blangero, **K. Tsetsos**, and C. Summerfield (2020). "Selective integration during sequential sampling in posterior neural signals". In: *Cerebral Cortex* 30.8, pp. 4454–4464.

- [J.25] Urai, A. E., J. W. De Gee, **K. Tsetso**s, and T. H. Donner (2019). "Choice history biases subsequent evidence accumulation". In: *eLife* 8, e46331.
- [J.24] Usher, M., K. Tsetsos, M. Glickman, and N. Chater (2019). "Selective Integration: An Attentional Theory of Choice Biases and Adaptive Choice". In: *Current Directions in Psychological Science*, p. 0963721419862277.
- [J.23] Glickman, M., K. Tsetsos, and M. Usher (2018). "Attentional Selection Mediates Framing and Risk-Bias Effects". In: *Psychological science* 29.12, pp. 2010–2019.
- [J.22] Moran, R. and **K. Tsetso**s (2018). "The standard Bayesian model is normatively invalid for biological brains". In: *Behavioral and Brain Sciences* 41, e237.
- [J.21] Talluri, B. C., A. E. Urai, **K. Tsetso**s, M. Usher, and T. D. H (2018). "Confirmation Bias Through Selective Overweighting of Choice-Consistent Evidence". In: *Current Biology*.
- [J.20] Turner, M. B., R. D. Schley, C. Muller, and **K. Tsetso**s (2018). "Competing theories of multi-alternative, multi-attribute preferential choice". In: *Psychological Review* 125.3, pp. 329–362.
- [J.19] Kunar, M. A., D. G. Watson, K. Tsetsos, and N. Chater (2017). "The influence of attention on value integration". In: *Attention, Perception, & Psychophysics*, pp. 1–13.
- [J.18] Tickle, H., M. Speekenbrink, K. Tsetsos, E. Michael, and C. Summerfield (2016). "Near-optimal Integration of Magnitude in the Human Parietal Cortex". In: *Journal of Cognitive Neuroscience*, pp. 1–15.
- [J.17] **Tsetso**s, **K.**, R. Moran, J. C. Moreland, N. Chater, M. Usher, and C. Summerfield (2016). "Reply to Davis-Stober et al.: Violations of rationality in a psychophysical task are not aggregation artifacts". In: *Proceedings of the National Academy of Sciences*, E4764–E4766.
- [J.16] **Tsetso**s, **K.**, R. Moran, J. Moreland, N. Chater, M. Usher, and C. Summerfield (2016). "Economic irrationality is optimal during noisy decision making". In: *Proceedings of the National Academy of Sciences* 113.11, pp. 3102–3107.
- [J.15] Bronfman, Z. Z., N. Brezis, R. Moran, K. Tsetsos, T. Donner, and M. Usher (2015). "Decisions reduce sensitivity to subsequent information". In: *Proc. R. Soc. B* 282.1810, p. 20150228.

- [J.14] Summerfield, C. and K. Tsetsos (2015). "Do humans make good decisions?" In: *Trends in cognitive sciences* 19.1, pp. 27–34.
- [J.13] **Tsetsos, K.**, N. Chater, and M. Usher (2015). "Examining the mechanisms underlying contextual preference reversal: Comment on Trueblood, Brown, and Heathcote (2014)." In: *Psychological Review* 122.4, pp. 838–847.
- [J.12] **Tsetsos, K.**, T. Pfeffer, P. Jentgens, and T. H. Donner (2015). "Action planning and the timescale of evidence accumulation". In: *PloS one* 10.6.
- [J.11] Cheadle, S., V. Wyart, K. Tsetsos, N. Myers, V. De Gardelle, S. H. Castañón, and C. Summerfield (2014). "Adaptive gain control during human perceptual choice". In: *Neuron* 81.6, pp. 1429–1441.
- [J.10] **Tsetsos, K.**, V. Wyart, S. P. Shorkey, and C. Summerfield (2014). "Neural mechanisms of economic commitment in the human medial prefrontal cortex". In: *eLife* 3, e03701.
- [J.09] Ossmy, O., R. Moran, T. Pfeffer, K. Tsetsos, M. Usher, and T. H. Donner (2013). "The timescale of perceptual evidence integration can be adapted to the environment". In: *Current Biology* 23.11, pp. 981–986.
- [J.08] Usher, M., K. Tsetsos, C. Y. Erica, and D. A. Lagnado (2013). "Dynamics of decision-making: from evidence accumulation to preference and belief". In: *Frontiers in psychology* 4.
- [J.07] Olivola, C. Y., A. B. Sussman, K. Tsetsos, O. E. Kang, and A. Todorov (2012). "Republicans Prefer Republican-Looking Leaders Political Facial Stereotypes Predict Candidate Electoral Success Among Right-Leaning Voters". In: *Social Psychological and Personality Science* 3.5, pp. 605–613.
- [J.06] Summerfield, C. and K. Tsetsos (2012). "Building bridges between perceptual and economic decision-making: neural and computational mechanisms". In: *Frontiers in neuroscience* 6.
- [J.05] **Tsetsos, K.**, N. Chater, and M. Usher (2012). "Salience driven value integration explains decision biases and preference reversal". In: *Proceedings of the National Academy of Sciences* 109.24, pp. 9659–9664.
- [J.04] **Tsetsos, K.**, J. Gao, J. L. McClelland, and M. Usher (2012). "Using time-varying evidence to test models of decision dynamics: bounded diffusion vs. the leaky competing accumulator model". In: *Frontiers in neuroscience* 6.

- [J.03] **Tsetsos, K.**, M. Usher, and J. L. McClelland (2011). "Testing multi-alternative decision models with non-stationary evidence". In: *Frontiers in neuroscience* 5.
- [J.02] **Tsetsos, K.**, M. Usher, and N. Chater (2010). "Preference reversal in multiattribute choice." In: *Psychological review* 117.4, pp. 1275–1293.
- [J.01] Usher, M., K. Tsetsos, and N. Chater (2010). "Postscript: Contrasting predictions for preference reversal." In: *Psychological Review* 117.4, pp. 1291–1293.

Preprints

- [P.03] Pfeffer, T., A. Ponce-Alvarez, T. Meindertsma, C. Gahnstrom, R. L. Van Den Brink, G. Nolte, K. Tsetsos, A. K. Engel, G. Deco, and T. H. Donner (2020). *Dissociation between catecholamines and acetylcholine in the human cerebral cortex*. In: *BioRxiv*.
- [P.02] Talluri, B. C., A. E. Urai, Z. Z. Bronfman, N. Brezis, **K. Tsetsos**, M. Usher, and T. H. Donner (2020). *Choices Change the Temporal Weighting of Decision Evidence*. In: *BioRxiv*.
- [P.01] Tickle, H., K. Tsetsos, M. Speekenbrink, and C. Summerfield. *Optional Stopping in a Heteroscedastic World*. In: ().

Conferences (as presenting author)

- [C.18] Tsetsos, K. (2019). "Overcoming decision noise via selective evidence integration". Talk at the 4th Multidisciplinary Conference on Reinforcement Learning and Decision Making, Montreal, Canada.
- [C.17] Tsetsos, K. and T. H. Donner (2019). "Beyond bottom-up: Choices bias subsequent evidence accumulation". Talk at the International Convention of Psychological Science (ICPS), Paris, France.
- [C.16] Tsetsos, K., C. Gahnstrom, T. Pfeffer, and T. H. Donner (2019). "GABAergic Competition Boosts the Irrationality of Protracted Decisions". Peer-reviewed submission and Poster at the 2019 Conference on Cognitive Computational Neuroscience, 13-16 September 2019, Berlin, Germany.
- [C.15] Tsetsos, K., C. Gahnstrom, T. Pfeffer, and T. H. Donner (2018). "GABAergic competition boosts the irrationality of human decision making". Poster at the Annual Meeting of the Federation of European Neuroscience Societies, Berlin, Germany.

- [C.14] Tsetsos, K. (2017). "Rapid experiential decisions as a window to paradoxical multi-attribute and risky choice patterns". Invited talk at the 50th Annual Meeting of the Society of Mathematical Psychology, University of Warwick, UK.
- [C.13] Tsetsos, K. (2017). "The dynamics of selective integration during rapid experiential decisions". Peer-reviewed paper in Proceedings of the 39th Annual Meeting of the Cognitive Science Society. Austin, TX: Cognitive Science Society.
- [C.12] Tsetsos, K. and T. H. Donner (2017). "GABAergic competition boosts the irrationality of human decision making". Poster at the Annual Meeting of the Society for Neuroscience (SfN), Washington DC, US.
- [C.11] Tsetsos, K. and A. Teodorescu (2017). "Context-sensitive valuation during simple multi-alternative decisions". Talk at the 50th Annual Meeting of the Society of Mathematical Psychology, University of Warwick, UK.
- [C.10] Tsetsos, K., R. Moran, M. Usher, N. Chater, and C. Summerfield (2016). "Selective Integration: When violations of rational choice theory are adaptive." Talk at the 2nd International Meeting of the Psychonomic Society, Granada, Spain.
- [C.09] Tsetsos, K. (2014). "The value of economic irrationality: why and when being irrational is advantageous." Talk in Decision-making at-Bristol, Bristol, UK.
- [C.08] Tsetsos, K. and C. Summerfield (2013). "The influence of response-framing on the processing of perceptual information." Poster at the 35th annual meeting of the Cognitive Science Society, Berlin, Germany.
- [C.07] Tsetsos, K., M. Usher, and N. Chater (2013). "Contextually sensitive value integration explains loss-aversion and loss-neglect in an experiential choice task." Talk at the 24th SPUDM meeting of the European Association for Decision Making, IESE Business School, Barcelona, Spain.
- [C.06] Tsetsos, K. and C. Summerfield (2013). "Challenges for sequential sampling models: the influence of evidence variance on choices and choice response times." Talk at the 46th Annual Meeting of the Society of Mathematical Psychology, Potsdam, Germany.
- [C.05] Tsetsos, K. (2012). "Value psychophysics: Bridging the gap between perceptual and value-based decisions." Talk at Theoretical and Empirical Aspects of Decision-Making, Bristol, UK.

- [C.04] Tsetsos, K., M. Usher, and N. Chater (2012). "Value psychophysics: How salience-driven value integration explains decision biases and preference reversal." Poster at Neural Coding, Decision-Making & Integration in Time, Rauischholzhausen, Germany.
- [C.03] Tsetsos, K., N. Chater, and M. Usher (2011). "The Mechanism of Fast Value Integration." Poster at the 23th SPUDM meeting of the European Association for Decision Making, Kingston Upon Thames, UK.
- [C.02] Tsetsos, K. and M. Usher (2011). "The Mechanism of Fast Value Integration". Poster at the 11th International Conference on Behavioral Decision Making, The Interdisciplinary Center Herzliya (IDC), Israel.
- [C.01] Tsetsos, K., N. Chater, and M. Usher (2009). "Contrasting computational models of preference reversal in multi-attribute choice." Poster at the Annual Meeting of the Society for Mathematical Psychology, Amsterdam, Netherlands.

Book Chapters

- [B.01] Summerfield, C. and K. Tsetsos (2020). "Rationality and Efficiency in Human Decision Making". In: *The Cognitive Neurosciences*. 6th. MIT Press, p. 427.

Invited Talks

- 2019 Interacting Minds Centre (IMC), Aarhus University, Aarhus, Denmark.
- 2019 Strategic Organization Design group, University of Southern Denmark, Odense, Denmark.
- 2019 Cognition, Values, Behaviour (CVBE) research group, LMU, Munich, Germany.
- 2019 Centre for Brain & Cognition, Universitat Pompeu Fabra, Barcelona, Spain.
- 2019 Department of Psychology, University of Hamburg, Germany.
- 2018 Department of Cognitive Studies, Ecole Normale Supérieure, Paris, France.
- 2018 Paris School of Economics and the University of Panthéon-Sorbonne, France.
- 2018 Department of Psychology, University of Edinburgh, UK.
- 2018 Behavioural Science Group, University of Warwick, UK.
- 2017 Mathematical Psychology 50th Annual Meeting, University of Warwick, UK.
- 2017 Reading Emotions Symposium (Emotion, Action and Belief), University of Reading, UK.
- 2017 CIMeC, Rovereto, University of Trento, Italy.
- 2016 SFB 936 retreat, Boltenhagen, UKE-Hamburg.
- 2016 Workshop on Sequential Sampling Models of Decision Making, Emmetten, University of Basel.

2016 Marr Club Seminar, Dept. of Psychology, University of Cambridge.
 2016 Affective Brain Lab, Dept. of Experimental Psychology, UCL.
 2015 Dept. of Neurophysiology and Pathophysiology, UKE-Hamburg.
 2015 Centre for Cognition, Computation and Modeling (CCCM), Birkbeck.
 2015 Wellcome Trust Centre for Neuroimaging (FIL), UCL.
 2015 School of Science, Birkbeck, University of London.
 2014 Cognitive & Behavioural Neuroscience day, University of Oxford.
 2014 Centre for Research in Autism and Education, IoE, University of London.
 2014 Department of Psychology, University of Basel.
 2014 London Judgment and Decision Making group, UCL.
 2013 Health Behaviour Research Centre, UCL.
 2013 Behavioural Science Group, University of Warwick.
 2013 Computational Biology Lab, University of Sheffield.
 2012 Centre of Cognitive Neuroscience and Cognitive Systems, University of Kent.
 2011 Department of Experimental Psychology, University of Oxford.
 2009 London Judgment and Decision Making group, UCL.


Services to the Field

Reviewer in Journals	<u>Regular</u> : <i>Psychological Review</i> , <i>Nature Human Behaviour</i> , <i>eLife</i> , <i>Nature Scientific Reports</i> , <i>Cognitive Psychology</i> , <i>Decision</i> , <i>Journal of Experimental Psychology: General</i> , <i>PLOS Computational Biology</i> , <i>PLOS One</i> , <i>Cognition</i> , <i>Psychonomic Bulletin & Review</i> . <u>Occasional</u> : <i>PNAS</i> , <i>Trends in Cognitive Sciences</i> , <i>Nature Communications</i> , <i>Proceedings of the Royal Society B: Biological Sciences</i> , <i>PLOS Biology</i> , <i>Psychological Science</i> , <i>Journal of Neuroscience</i> , <i>Journal of Mathematical Psychology</i> , <i>Journal of Cognitive Neuroscience</i> , <i>Current Opinion in Behavioral Sciences</i> , <i>Cognitive Science</i> , <i>Management Science</i> , <i>Attention Perception & Psychophysics</i> , <i>Experimental Psychology</i> , <i>Thinking & Reasoning</i> , <i>Current Zoology</i> , <i>Acta Psychologica</i> , <i>Collabra: Psychology</i> , <i>Quarterly Journal of Experimental Psychology</i> , <i>Journal of Computational Neuroscience</i> , <i>Bulletin of Economic Research</i> , <i>Journal of Experimental Psychology: Learning Memory and Cognition</i> , <i>The Leadership Quarterly</i> , <i>European Journal of Social Psychology</i> .
Grant Reviewer	<i>US National Foundation (NSF)</i> .
Book Reviewer	<i>Elsevier–Academic press</i> .
Editorial Service	Special Issue for <i>Frontiers in Cognitive Science & Frontiers in Decision Neuroscience: Dynamics of decision making; from evidence to preference</i> .
Organizer	co-organizer in 1-day workshop: <i>Dynamics of decision making; from evidence accumulation to preference formation & belief updating</i> . Centre for Cognition, Computation and Modelling, Birkbeck, University of London.
PhD examination	<i>External examiner for D.Phil. thesis of Miss Chui Lam Li, University of Oxford</i> .
PhD committees	<i>Internal committee member for 2 PhD candidates, Department of Systems Neuroscience, University of Hamburg</i> .

Teaching & Supervision Experience

- 2019–present Main PhD supervisor for Ms Maryam Tohidi-Moghaddam, Postdoc supervisor for Dr Yinan Cao and Dr Marcus Siems, UKE–Hamburg.
- 2009–2019 Project supervisor, Supervised 7 undergraduate and 8 MSc theses at UCL, Oxford and Hamburg. Assisted in the supervision of 3 PhD students in Oxford and Hamburg.
- 10/2015 Guest lecturer, MSc Cognitive Neuroscience and Neuropsychology: lecture on *Decision-making*.
- 09/2008–04/2009 Demonstrator, 2nd year undergraduate laboratory for “Research and Quantitative Methods in Psychology”, UCL.

Predocctoral Research Experience

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- 2008–2011 Freelance Research Assistant, *Birkbeck, Stanford and Tel Aviv University*, project on perceptual choice (MURI-AFOSR-BAA06-028)
Supervisors: Professor JL McClelland and Professor M Usher
- 2009–2010 Research Assistant (part-time), *UCL, CPBD & ELSE*, ESRC funded project on the Psychophysical and Cognitive Bases of Decision-making
- 2008–2009 Freelance Research Analyst, *Decision Techology LTD*, London
- 2005–2006 Analyst/ Programmer, *Department of Electronic Lexicography*, Institute for Language & Speech Processing, Athens-Greece

Technical Skills

Experimental Methods

Psychophysics, M/EEG, Pharmacological Intervention, Eye-tracking, fMRI.

Programming

- Generic** Java, C/C++, Python, Prolog, .Net technologies, Assembly, Fortran.
- Specialized** Matlab, R, WinBugs, SPM, FieldTrip.
- Databases** Postgres, MySQL, MS SQL Server, MS Access.
- Scripting** ActionScript, PHP, Javascript, AWK, C-shell.
- Web** Adobe Flash, HTML, DHTML, CSS, XML, XHTML.
- Modeling** Neuron, PDP++, Topographica.