

Personal details

First name, surname: Ivan Toni
Date and place of birth: 18 April 1967, Cesena (Italy)
Nationality: Italian
Marital status: Married, with two children

Education - MSc

University: University of Bologna (Italy)
Date: 17 July 1990
Topic: Biological Sciences (with honours)

Education - PhD

University: University of Parma (Italy)
Date: 31st January 1996
Topic: Neuroscience
Supervisor: Prof. Maurizio Gentilucci
Title of thesis: On the role of somaesthetic information
in planning and executing reaching-grasping movements

Research positions

Oct 2001 – present Principal Investigator, research group “Intention & Action”
Donders Centre for Cognitive Neuroimaging, Nijmegen, The Netherlands

Oct 1998 – Sept 2001 Senior Research Fellow, Institut für Medizin
Forschungszentrum Jülich, Jülich, Germany

Feb 1996 – Sept 1998 Research Fellow, Functional Imaging Laboratory, London, UK
Mentor: Prof. Richard Passingham

May 1994 – June 1995 Guest researcher, INSERM U94, Lyon, France
Supervisors: Prof. Marc Jeannerod, Prof. Jean Decety

April 1992 – Jan 1996 PhD student, Institute of Human Physiology, Parma, Italy
Supervisor: Prof. Maurizio Gentilucci

Academic positions

March 2012 – present Full professor, personal chair in “Motor Cognition”
Faculty of Social Sciences, Radboud University Nijmegen, The Netherlands

Research interests

My research is focused on the mechanisms supporting the integration of rules, percepts, and concepts into the sensorimotor machinery of the human brain. I address this issue by studying both healthy and pathological human brains, using various neurophysiological techniques. I pursue this interest along two related research lines focused on instrumental and communicative actions.

Concerning instrumental actions, I wish to understand the cognitive and cerebral structures that make goal-directed movements possible. This category of movements is the building block for fundamental human abilities like object prehension, tool use, and other complex actions. The major contribution of this research line has been to define how lateral occipito-temporal cortex, inferior parietal cortex, and premotor cortex structure an action plan on the basis of perceptual features (Faillenot et al. *Cerebral Cortex* 1997; Grol et al. *JNeuro* 2006; Verhagen et al. *JNeuro* 2008; Majdandzic et al. *Cerebral Cortex* 2009; Verhagen et al. *JNeuro* 2008,2009; Zimmermann et al. *eNeuro* 2016; Stolk et al. *Elife* 2019). The findings suggest that perceptual knowledge influences sensorimotor processes by biasing movement selection at the earliest stages of planning, in contrast to existing models postulating temporal precedence of visuospatial over perceptual information processing. We are also testing whether and how this principle generalizes to rule-based goal-oriented behavior (Toni et al. *EBR* 2001; Passingham and Toni *NeuroImage* 2001; Roelofs et al. *SCAN* 2009; Koch et al. *Neuroscience Biobehav Rev* 2018) implemented through fronto-striatal loops (Rowe et al. *Science* 2000; Toni et al. *Cerebral Cortex* 2002; Piray et al. *JNeuro* 2016). Recently, we have focused on emotional control, thought as a problem of rapid response selection based on abstract rules that need to override predominant action tendencies. The major contribution of this research line has been to define the neural mechanisms through which frontal portions of the brain solve this problem, upregulating posterior parietal regions involved in rule selection, and downregulating subcortical regions supporting the automatic evaluation of emotions (Volman et al. *Current Biology* 2011; Volman et al. *Cerebral Cortex* 2013; Volman et al. *JNeuro* 2013; Tyborowska et al. *JNeuro* 2016; Bramson et al. *JNeuro* 2018). I have also studied instrumental actions by using imagined movements, a useful tool for disambiguating motor planning from sensory reafferences evoked by movement execution, and for isolating altered motor plans in patients with movement disorders. In this context, we have shown that imagined movements are on-line simulations of one's own body movements that depend on the current body position, rather than a product of general rules of biological motion (de Lange et al. *NeuroImage* 2006); that imagined movements rely on effector-specific motor plans, rather than generic action schemas (Bakker et al. *NeuroImage* 2008); and that these operations rely on feed-forward predictive mechanisms implemented through oscillatory activities in frontal areas (Brinkman et al. *JNeuro* 2014; Brinkman et al. *JNeuro* 2016; Stolk et al. *Elife* 2019). I

have then applied this basic knowledge to understand the clinically relevant issue of how impaired activity in one brain circuit can be compensated by activity in other circuits, such that behavioral performance is not altered despite neuronal loss. We found that increased dependence on visual information processing, typical of Parkinson's disease patients, reflects compensatory mechanisms during the generation of motor plans (Helmich et al. *Neuropsychologia* 2007; van Nuenen et al. *JNeuro* 2012). Those compensatory mechanisms are already operating during a pre-clinical stage of the disorder (van Nuenen et al. *Brain* 2012). A similar circuit-level perspective has led to another insight relevant for understanding tremor, a cardinal sign of Parkinson's disease (Helmich et al. *Brain* 2011). In contrast to previous attempts focused on localizing a tremor generator, we have shown that this pathological behavior emerges from maladaptive interactions between two functionally and anatomically distinct cerebral circuits, with transient pathological activity in one circuit driving a second circuit to operate outside its physiological range over a much longer timescale (Helmich et al. *Annals of Neurology* 2011). Finally, starting from the basic observation that what we currently do is influenced by what we have just done, we were able to account for another well-known but mysterious features of Parkinson's disease, namely the difficulties that these patients have in starting a movement. The simple and novel insight is that Parkinson patients have a problem in selecting movements that are different from what they have just done, including to hold steady (Helmich et al. *JNeuro* 2009).

A second, more recent line of research has been concerned with understanding how our actions can be used to modify mental states in other people. This issue is closely linked to the first research line insofar we postulate that communicative actions, even more so than instrumental actions, are organized from the earliest stages according to abstract conceptual knowledge, e.g. the inferred desires and beliefs of the addressee (Toni et al. *JPhysiology* 2008; Stolk et al. *TICS* 2014; Wheatley et al. *Neuron* 2019). We have focused on the cognitive and cerebral structures supporting the generation and the understanding of novel communicative actions, a useful tool for tapping directly into generative communicative mechanisms unconfounded by the exploitation of pre-existing communicative conventions (Newman-Norlund et al. *Cognition* 2008; de Ruiter et al. *Interaction Studies* 2010; Willems et al. *Psychological Science* 2010). The major contribution of this research line has been to define a neurophysiological mechanism for the selection of novel communicative actions. We have shown that communicative innovation relies on neuronal computations that are shared across generating and understanding novel shared symbols, operating over temporal scales independent from transient sensorimotor behavior (Stolk et al. *PNAS* 2013) and dependent on the shared conceptualizations of a signal's use (Stolk et al. *PNAS* 2014).

Funding

- 2022 – 2027 Research grant from European Research Council on “*Human communication as joint epistemic engineering*” (~2.5 m€ - main applicant: Ivan Toni)
- 2021 – 2027 Research grant from NWO-STW on “*Neural and computational control mechanisms of social-emotional regulation*” (~750 k€ - main applicant: Ivan Toni; co-applicant: Karin Roelofs)
- 2019 – 2023 Research grant from Donders Centre for Cognition, Radboud University on “*The cognitive and interactional infrastructure of adaptive language use*” (~290 k€ - main applicants: Iris van Rooij; co-applicant: Ivan Toni)
- 2017 – 2022 Research grant from Language in Interaction consortium, NWO on “*Creating a shared cognitive space: The use of language in interaction*” (~1.5 m€, project coordinator: Ivan Toni)
- 2016 – 2018 Research grant from Hersenstichting Foundation on “*The cerebral mechanisms underlying dystonic and essential tremor: a multimodal network approach*” (~100 k€ - main applicants: Rick Helmich, Bart van de Warrenburg & Ivan Toni)
- 2015 – 2019 Research grant from Language in Interaction consortium, NWO on “*The Game of Language: Complex Communication and Mental States*” (~290 k€ - main applicants: Johan van Benthem & Ivan Toni, in collaboration with Iris van Rooij)
- 2014 – 2018 Research grant from Language in Interaction consortium, NWO on “*Neurocomputational mechanisms of communicative pointing*” (~290 k€ - main applicants: Ivan Toni & Pieter Medendorp, in collaboration with Iris van Rooij)
- 2013 – 2017 Research grant from Donders Centre for Neuroscience, Radboud University on “*Send the little brain to the gym: Cerebral compensatory mechanism in spinocerebellar ataxias*” (~228 k€ - main applicants: Bart van de Warrenburg & Ivan Toni).
- 2012 – 2017 Research grant from NWO-MAGW on “*How the integration of sensorimotor simulation and mentalizing allows human action understanding*” (TOP Programme; ~750 k€ - main applicant: Harold Bekkering; co-applicant: Ivan Toni).
- 2011 - 2015 Equipment grant from NWO-ZoMW on “*The Donders laboratory for non-invasive brain stimulation*” (MiddleGroot scheme, ~320 k€ - main applicant: Dick Stegeman; co-applicant: Ivan Toni).
- 2011 – 2015 Research grant from NWO-MAGW on “*Integrating motivation, cognition and action - Frontal control of dopamine-dependent striatal processing*” (Open Competition Programme; ~200 k€ - main applicants: Ivan Toni, Roshan Cools).
- 2011 – 2015 Research grant from Prinses Beatrix Fonds on “*Postural instability and gait disability*” (~250 k€ - main applicant: Bas Bloem; co-applicant: Ivan Toni).
- 2011 – 2015 Research grant from NWO on “*What is a mental simulation?*” (Program “Brain and Cognition: An Integrated Approach”; ~500 k€ - main applicant: Ivan Toni; co-applicants: Chris Dijkerman, Floris de Lange, Frans Leijten).
- 2010 – 2011 Research grant from Davis Phinney Foundation on “*Brain training: effects of aerobic exercise on cognitive and adaptive plasticity in Parkinson's disease*” (~130 k€ - main applicant: Bas Bloem; co-applicant: Ivan Toni).
- 2010 – 2014 Research grant from Donders Centre for Cognition, Radboud University Nijmegen on “*How movements mean: A computational model of nonverbal communication*” (~200 k€ - main applicants: Iris van Rooij, Ivan Toni, & Pim Haselager).

- 2009 – 2014 Research grant from NWO-MAGW on “*Raising glasses and pointing fingers: A neurocognitive account of communicative actions*” (VICI Programme; ~1300 k€ - main applicant: Ivan Toni).
- 2008 – 2012 Research grant from NICI, Radboud University Nijmegen on “*Decoding global maps in the human motor system*” (~200 k€ - main applicants: Ivan Toni, Pieter Medendorp).
- 2006 - 2010 Equipment grant from NWO-MAGW on “*Understanding human action*” (MiddleGroot Programme; ~150 k€ - main applicant: Harold Bekkering; co-applicant: Ivan Toni).
- 2006 – 2010 Research grant from NWO-MAGW on “*Dorsal and ventral stream contributions to visuomotor transformations*” (Open Competition Programme; ~200 k€; main applicants: Chris Dijkerman, Ivan Toni).
- 2006 – 2008 Research grant from Alkemade Foundation on “*Stoornissen in lichaamsschema en de invloed op bewegen bij de ziekte van Parkinson*” (~174 k€; in collaboration with Bas Bloem).
- 2004 – 2008 Research grant from NICI, Radboud University Nijmegen, on “*Goals and means in the human brain*” (~200 k€ - main applicants: Harold Bekkering, Ivan Toni).
- 2004 – 2009 Research grant from the European Union on “*Joint Action in Science and Technology*” (6th Framework Programme; ~6000 k€; work-package leader).
- 2003 – 2007 Research grant from the International Parkinson Funds on “*Cortical stimulation to treat for freezing of gait in Parkinson’s disease*” (~200 k€; in collaboration with Bas Bloem).
- 2003 – 2008 Research grant from NWO-MAGW (NL) on “*Neural dynamics of movement representations*” (VIDI Programme - ~600 k€ - main applicant: Ivan Toni).
- 1999 – 2001 Research grant from Hermann von Helmholtz-Gemeinschaft (Germany).
- 1996 Study grant from National Hospital (UK).
- 1995 Study grant from European Science Foundation (Belgium).
- 1994 Study grant from Fyssen Foundation (France).
- 1992 – 1996 Study grant from Ministero della Ricerca Scientifica (Italy).

Teaching & Mentoring

To date, I have supervised 22 MSc students and 25 PhD students until their graduation (PhD students: Rogier Mars, 10 November 2006, *cum laude*¹; Meike Grol, 18 January 2008; Floris de Lange, 14 March 2008, *cum laude*; Maaïke Bakker, 27 May 2009; Jasminka Majdandžić, 23 June 2010; Rick Helmich, 24 May 2011 *cum laude*; Lennart Verhagen, 23 March 2012; Anke Sniijders, 4 June 2012 *cum laude*; Bart van Nuenen, 22 November 2012; Inge Volman, 25 April 2013, *cum laude*; Arjen Stolk, 2 September 2014, *cum laude*; Florian Krause, 10 October 2014; Frank Leone, 24 October 2014; Mark Blokpoel, 5 November 2015; Loek Brinkman, 10 June 2016; Marius Zimmermann, 23 November 2016, Payam Piray, 1 Dec 2016, *cum laude*; Anke Marit Albers, 22 March 2017; Miriam de Boer, 2 June 2017; Johanna van Schaik, 7 July 2017; Annelies van Nuland, 23 June 2020; Anna Tyborowska, 12 November 2020; Michiel Dirx *cum laude*, 27 January 2021; Bob Bramson *cum laude*, 30 April 2021; Rui Liu, forthcoming). I also mentored 6 post-docs. Currently, I am mentoring 2 post-docs and supervising 6 PhD students. Several former students have received prestigious early-career grants: *Marie Skłodowska-Curie grants* (Rogier Mars and Lennart Verhagen, Department of Experimental Psychology, Oxford UK; Arjen Stolk, UC Berkeley, USA; Inge Volman, University College London, UK), *NWO-Rubicon Awards* (Floris de Lange, Neurospin, Paris FR; Roel Willems and Arjen Stolk, UC Berkeley, USA), *NWO-VENI Award* (Rick Helmich).

2016	Organization: international workshop on “ <i>Computational Psychiatry</i> ” (sponsored by Radboud University – co-organizer: Payam Piray, Roshan Cools)
2015	Organization: international summer school on “ <i>Neurocomputational approaches to decision making: from perception to social cognition</i> ” (sponsored by Radboud University – co-organizer: Roshan Cools)
2014	Organization: international workshop on “ <i>Towards a neuroscience of mutual understanding</i> ” (sponsored by Donders Institute – co-organizers: Arjen Stolk, Peter Hagoort)
2013	Organization: international workshop on “ <i>In control: Regulating affective decisions and actions</i> ” (sponsored by Donders Institute – co-organizers: Inge Volman, Karin Roelofs)
2011	Organization and teaching: Autumn School on “ <i>Perception, Action and Control: Methods, Concepts, and Challenges</i> ” (sponsored by NWO, with Pieter Medendorp and John van Opstal)
2011	Organization: international workshop on “ <i>Cerebral compensation in neurological disease</i> ” (sponsored by Donders Institute – co-organizers: Rick Helmich, Bas Bloem)
2009	Organization: international workshop on “ <i>Multimodal imaging in cognitive neuroscience</i> ” (sponsored by NWO – co-organizer: David Norris)
2008 – present	Organization and teaching: yearly course on Social Neurocognition (Master in Cognitive Neuroscience, Radboud University Nijmegen; course evaluation: 4.3 out of 5 points)
2007	Organization: international workshop on “ <i>The role of simulation in cognition</i> ” (sponsored by NWO – co-organizer: Floris de Lange)
2006	Organization: international workshop on “ <i>Selection, preparation, and monitoring of actions</i> ” (sponsored by NWO – co-organizer: Rogier Mars)
2005 – 2011	Organization and teaching: yearly practical course on neuroimaging methods (fMRI seminars - Master in Cognitive Neuroscience, Radboud University Nijmegen)
2005 – 2020	Organization and teaching: yearly theoretical course on neuroimaging methods (Neuroimaging I - Master in Cognitive Neuroscience, Radboud University Nijmegen)
2004 – 2020	Teaching: yearly workshop on introduction to neuroimaging methods (“Toolkit of cognitive neuroscience”)
2004 – 2016	Organization and teaching: yearly international workshop on advanced neuroimaging methods (“Toolkit of cognitive neuroscience – advanced imaging methods”).

¹ In the Netherlands, *cum laude* is the highest and exceptional grade awarded to a PhD thesis

Other academic activities and awards

- 2016 – present Member of the International Neuropsychological Society
- 2014 Radboud Science Award
- 2014 – 2019 Evaluation panel – “*Vernieuwingsimpuls - VIDP*” (NWO-ZonMw)
- 2017 – present Senior Editor – *The Journal of Neuroscience*
- 2012 – 2017 Review Editor – *The Journal of Neuroscience*
- 2011 – 2015 Research coordinator of the research theme “Perception, Action and Control” at the Donders Institute for Brain, Cognition and Behaviour. The theme is an academic structure that includes more than two hundred researchers, organized in 18 research groups across three faculties of the Radboud University Nijmegen
- 2010 – present Review Editor – *Frontiers in Language Sciences*
- 2010 Editor of a Special Issue of *Frontiers in Human Neuroscience* on “*Understanding human intentional communication*” (together with Harold Bekkering)
- 2008 – 2018 Scientific supervisor of the Donders Laboratory for non-invasive brain stimulation (together with Dick Stegeman)
- 2008 – 2018 Evaluation panel – “*Van Molecuul tot Organisme*” (NWO-ALW)
- 2008 Editor of a Special Issue of *Cortex* on “*Selection, preparation, and monitoring: current approaches to studying the neural control of action*” (together with R. Mars and W. Hulstijn)
- 2007 – present Review Editor – *Frontiers in Integrative Neuroscience*
- 2003 – present I have been invited to present my work at prestigious research centers, as indicated in the following short-list: National Institute of Mental Health (Bethesda, USA), Laboratory for Social and Neural Systems Research (Zurich, CH), Netherlands Institute for Advanced Study (Wassenaar, NL), Department of Experimental Psychology (Utrecht, NL), Department of Psychology (Leiden, NL), Netherlands Institute for Neuroscience (Amsterdam, NL), Department of Human Movement Science (Groningen, NL), Department of Cognitive Neuroscience (Maastricht, NL), Max-Planck Institute for Psycholinguistics (Nijmegen, NL), Royal Netherlands Academy of Arts and Science (Amsterdam, NL), Wellcome Trust Centre for Neuroimaging (London, UK), Institute of Neurology (London, UK), Department of Experimental Psychology (Oxford, UK), Institut des Sciences Cognitives (Lyon, France), Department of Biopsychology (Bochum, Germany), Institut de Neurosciences Cognitives de la Méditerranée (Marseille, France), Movement Disorders Society (Dublin, Ireland), Xprag conference (Oslo, Norway), CITEC (Bielefeld, Germany).
- 2003 – present I frequently review manuscripts and grants for the following journals and scientific organizations: *Acta Psychologica*, *American Journal of Psychiatry*, *American Journal of Physiology*, *Behavioral Neuroscience*, *Behavioral Brain Research*, *BMC Neurology*, *BMC Neuroscience*, *Brain*, *Brain & Cognition*, *Brain and Language*, *Brain Research*, *Cerebral Cortex*, *Clinical Neurophysiology*, *Current Biology*, *Cognition*, *Cognitive Neuropsychology*, *Cortex*, *Experimental Brain Research*, *European Journal of Neuroscience*, *Frontiers in Neuroscience*, *Human Brain Mapping*, *Interaction Studies*, *Journal of Cognitive Neuroscience*, *Journal of Motor Behavior*, *Journal of Psychophysiology*, *Journal of Neurophysiology*, *Journal of Neuroscience*, *Nature Communications*, *Nature Reviews Neuroscience*, *NeuroImage*, *Neuropsychologia*, *Neuropsychology*, *Neuron*, *NeuroReport*, *Neuroscience*, *PLOS Biology*, *PLOS Medicine*, *PLOS One*, *PNAS*, *Psychological Science*, *Psychonomic Bulletin & Review*, *Scholarpedia*, *Science*, *Social Neuroscience*; NWO (NL), National Science Foundation (USA), Medical Research Council (UK), BBSRC (UK), Agence Nationale de la Recherche (FR), MURST (Italy), Neurological Foundation of New Zealand (NZ), Israel Science Foundation (IL), Wellcome Trust (UK).

Bibliometry

I have published more than 160 peer-reviewed articles in outstanding academic journals (e.g. Science, Science Advances, PNAS, Current Biology, Neuron, Journal of Neuroscience, Brain, Cerebral Cortex, Annals of Neurology, Trends in Cognitive Science, Cognition, Cognitive Science, Psychological Science), resulting in more than 19000 citations and an *h*-index of 75 (Google Scholar). For further details, see

<http://orcid.org/0000-0003-0936-3601>, <http://www.researcherid.com/rid/D-1980-2009>,
<http://scholar.google.com/citations?hl=en&user=YNMaEfoAAAAJ>.

Papers published in international peer-reviewed journals

- Liu R, Bögels S, Bird G, Medendorp WP, Toni I (2022) Hierarchical integration of communicative and visuospatial perspective-taking demands in sensorimotor control of referential pointing. *Cognitive Science* 46:e13084
- Nieuwhof F, Toni I, Dirx MF, Gallea C, Vidailhet M, Buijink AWG, van Rootselaar AF, van de Warrenburg BPC, Helmich RC (2022) Cerebello-thalamic activity drives an abnormal motor network into dystonic tremor. *NeuroImage: Clinical* 33:102919
- Nieuwhof F, Toni I, Buijink AWG, van Rootselaar AF, van de Warrenburg BPC, Helmich RC (2022) Phase-locked transcranial electrical brain stimulation for tremor suppression in dystonic tremor syndromes. *Clinical Neurophysiology*
- Maas RP, Schutter DJLG, Toni I, Timmann D, van de Warrenburg BPC (2022) Cerebellar transcranial direct current stimulation modulates timing but not acquisition of conditioned eyeblink responses in SCA3 patients. *Brain Stimulation*
- Maas RP, Teerenstra S, Toni I, Klockgether T, Schutter DJLG, van de Warrenburg BPC (2022) Cerebellar transcranial direct current stimulation in spinocerebellar ataxia type 3: a randomized, double-blind, sham-controlled trial. *Neurotherapeutics*
- Johansson ME, Cameron IGM, van der Kolk NM, De Vries NM, Klimars E, Toni I, Bloem BR, Helmich RC (2022) Aerobic exercise alters brain function and structure in Parkinson's disease. *Annals of Neurology* 91:203-216
- Uithol S, Bryant KL, Toni I, Mars RB (2021) The anticipatory and task-driven nature of visual perception. *Cerebral Cortex* 31:5354-5362
- Lustenhouwer R, Cameron IGB, Wolfs E, van Alfen N, Toni I, Geurts ACH, van Engelen BGM, Groothuis JT, Helmich RC (2021) Visuomotor processing is altered after peripheral nerve damage in neuralgic amyotrophy. *Brain Communications* 4:fac034
- Kolling N, Braunsdorf M, Vijayakumar S, Bekkering H, Toni I, Mars RB (2021) Constructing others' beliefs from one's own using medial frontal cortex. *The Journal of Neuroscience* 41:9571-9580
- Bramson B, den Ouden HEM, Toni I, Roelofs K (2020) Improving emotional-action control by targeting long-range phase-amplitude neuronal coupling. *eLife* 9:e59600
- van Nuland A, Helmich RC, Dirx MF, Zach H, Toni I, Cools R, den Ouden HEM (2020) Effects of dopamine on reinforcement learning in Parkinson's disease depend on motor phenotype. *Brain* 143:3422-3434
- Fritsche M, van der Wel RPRD, Smit R, Bloem BR, Toni I, Helmich RH (2020) Impaired motor recycling during action selection in Parkinson's disease. *eNeuro*
- Branson B, Folloni D, Verhagen L, Hartogsveld B, Mars RB, Toni I, Roelofs K (2020) Human lateral Frontal Pole contributes to control over emotional approach-avoidance actions. *Journal of Neuroscience* 40:2925-2934

- Dirkx MF, Zach H, van Nuland A, Bloem BR, Toni I, Helmich RC (2020) Cognitive load amplifies Parkinson's tremor through excitatory network influences onto the thalamus. *Brain* 143:1498-1511
- Lustenhouwer R, Cameron IGM, van Alfen N, Oorsprong T, Toni I, van Engelen BGM, Groothuis JT, Helmich RC (2020) Altered sensorimotor representations after recovery from peripheral nerve damage in neuralgic amyotrophy. *Cortex* 127:180-190
- Koch SBJ, Galli A, Volman I, Kaldewaij R, Toni I, Roelofs K (2020) Neural control of emotional actions in response to affective vocalizations. *Journal of Cognitive Neuroscience* 32:977-988
- van Nuland AJ, den Ouden HEM, Zach H, Dirkx MF, van Asten JJ, Scheenen TW, Toni I, Cools R, Helmich RC (2020) GABA-ergic changes in the thalamo-cortical circuit in Parkinson's disease. *Human Brain Mapping* 41:1017-1029
- Cameron I, Cretu A, Struik F, Toni I (2020) The effects of a TMS double lesion to a cortical network. *eNeuro*
- Wheatley T, Boncz A, Toni I, Stolk A (2019) Beyond the Isolated Brain: The Promise and Challenge of Interacting Minds. *Neuron* 103:186-188
- Stolk A, Brinkman L, Vansteensel MJ, Aarnoutse E, Leijten FSS, Dijkerman CH, Knight RH, de Lange FP, Toni I (2019) Electroencephalographic dissociation of alpha and beta rhythmic activity in the human sensorimotor system. *eLife* 8:e48065
- Piray P, Ly V, Roelofs K, Cools R, Toni I (2019) Emotionally aversive cues suppress neural systems underlying optimal learning in socially anxious individuals. *Journal of Neuroscience* 39:1445-1456
- Maas RPPWM, Toni I, Doorduyn J, Klockgether T, Schutter DJLG, van de Warrenburg BPC (2019) Cerebellar transcranial direct current stimulation in spinocerebellar ataxia type 3 (SCA3-tDCS): rationale and protocol of a randomized, double-blind, sham-controlled study. *BMC Neurology* 19:149
- Dirkx MF, Zach H, van Nuland A, Bloem BR, Toni I, Helmich RC (2019) Cerebral differences between dopamine-resistant and dopamine-responsive Parkinson's tremor. *Brain* 142:3144-3157
- Wadge H, Brewer R, Bird G, Toni I, Stolk A (2019) Communicative Misalignment in Autism Spectrum Disorder. *Cortex* 115:15-26
- Uithol S, Goergen K, Pischetta D, Toni I, Haynes JD (2018) The context-dependent nature of the neural implementation of intentions. *bioRxiv*
- Branson B, Jensen O, Toni I, Roelofs K (2018) Cortical oscillatory mechanisms supporting the control of human social-emotional actions. *Journal of Neuroscience* 38:5739-5749
- Winner T, Oosterwijk AM, Verhagen L, Medendorp WP, van Rooij I, Toni I (2019) Recipient design in communicative pointing. *Cognitive Science* 43:e12733
- Koch SBJ, Mars RB, Toni I, Roelofs K (2018) Emotional control, reappraised. *Neuroscience & Biobehavioral Reviews* 95:528-534
- Tyborowska A, Volman I, Niermann H, Pouwels L, Smeekens S, Cillesen AH, Toni I, Roelofs K (2018) Early-life and pubertal stress differentially modulate grey matter development in human adolescents. *Nature Scientific Reports* 8:9201
- Blokpoel M, Wareham T, Haselager P, Toni I, van Rooij I. (2018) Deep analogical inference as the origin of hypotheses. *Journal of Problem Solving* 11:1-24
- van der Schaaf ME, Roelofs K, de Lange FP, Geurts DEM, van der Meer JWM, Knoop H, Toni I (2018) Altered preparation and monitoring of physical effort in chronic fatigue syndrome. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* 3:392-404

- Nieuwhof F, Bloem BR, Reelick MF, Aarts E, Maidan I, Mirelman A, Hausdorff JM, Toni I, Helmich RC (2017) Impaired dual tasking in Parkinson's disease is associated with reduced focussing of corticostriatal activity. *Brain* 140:1384-1398
- Albers AM, Meindersma T, Toni I, de Lange FP (2017) Decoupling of BOLD amplitude and pattern classification of orientation-selective activity in human visual cortex. *NeuroImage* 180:31-40
- de Boer M, Kokal I, Blokpoel M, Stolk A, Roelofs K, van Rooij I, Toni (2017) Oxytocin enhances cognitive exploration during human communication. *Psychoneuroendocrinology* 86:64-72
- Hartogsveld B, Bramson B, Vijayakumar S, Van Campen D, Marques J, Roelofs K, Toni I, Bekkering H, Mars R. (2017) Lateral frontal pole and relational processing: Activation patterns and connectivity profile. *Behavioural Brain Research* 355:2-11
- Zimmermann M, Mars R, de Lange FP, Toni I, Verhagen L. (2018) Is the Extrastriate Body Area part of the dorsal visuomotor stream? A study of structural and functional connectivity. *Brain structure and function* 223:31-46
- Oosterwijk AM, de Boer M, Stolk A, Hartmann F, Toni I, Verhagen L (2017) Communicative knowledge pervasively influences sensorimotor computations. *Nature Scientific Reports* 7:4268
- van Schaik JE, Sacheli M, Bekkering H, Toni I, Aglioti SM (2017) Measuring Mimicry: General Corticospinal Facilitation During Observation of Naturalistic Behaviour. *European Journal of Neuroscience* 46:1828-1836
- Radke S, Volman I, Kokal I, Roelofs K, de Bruijn ERA, Toni I (2017) Oxytocin reduces amygdala response during threat approach. *Psychoneuroendocrinology* 79:160-166
- Janssen A, Munneke M, Nonnekes J, Van der Kraan T, Nieuwboer A, Toni I, Snijders A, Bloem BR, Stegeman D (2017) Cerebellar theta burst stimulation does not improve freezing of gait in patients with Parkinson's disease. *Journal of Neurology* 264:963-972
- Dirks MF, den Ouden H, Aarts E, Timmer M, Bloem BR, Toni I, Helmich RC (2017) Dopamine reduces Parkinson's tremor by increasing thalamic inhibition. *Brain* 140:721-734
- Caligiore D, Helmich R, Hallett M, Moustafa A, Timmermann L, Toni I, Baldassarre G (2016) Parkinson's disease as a system-level disorder. *Nature Parkinson's Disease* 2:16025
- van der Schaaf ME, de Lange FP, Schmits IC, Geurts DEM, Roelofs K, van der Meer JWM, Toni I, Knoop H (2017) Neuronal structure of prefrontal cortex in patients with Chronic Fatigue Syndrome varies as function of pain symptoms. *Biological Psychiatry* 81:358-365
- Ye Z, Stolk A, Toni I, Hagoort P. (2017) Oxytocin modulates semantic integration in speech comprehension. *Journal of Cognitive Neuroscience* 29:267-276
- Piray P, den Ouden HE, van der Schaaf ME, Toni I, Cools R (2017) Dopaminergic modulation of the functional ventrodorsal architecture of the human striatum. *Cerebral Cortex* 27:485-495
- Brinkman L, Stolk L, Marshall T, Esterer S, Sharp P, Dijkerman HC, de Lange FP, Toni I (2016) Independent causal contributions of alpha- and beta-band oscillations during movement selection. *Journal of Neuroscience* 36:8726-8733
- Heed T, Leoné F, Toni I, Medendorp WP (2016) Functional versus effector-specific organization of human posterior parietal cortex - revisited. *Journal of Neurophysiology* 116:1885-1899
- Stolk A, Verhagen L, Toni I (2016) Conceptual alignment: how brains achieve mutual understanding. *Trends in Cognitive Science* 20:180-191
- Dirks MF, den Ouden H, Aarts E, Timmer M, Bloem BR, Toni I, Helmich RC (2016) The cerebral network of Parkinson's tremor - an effective connectivity fMRI study. *Journal of Neuroscience* 36:5362-5372

- Zimmermann M, Verhagen L, de Lange FP, Toni I (2016) The extrastriate body area computes desired goal states during action planning. *eNeuro* 3:2
- Piray P, Toni I, Cools R. (2016) Human choice strategy varies with anatomical projections from ventromedial prefrontal cortex to medial striatum. *Journal of Neuroscience* 36:2857:2867
- Tyborowska A, Volman I, Toni I, Roelofs K. (2016) Puberty shifts emotional control from pulvinar to anterior prefrontal cortex. *Journal of Neuroscience* 36:6156-6164
- Volman I, von Borries AKL, Bulten BH, Verkes RJ, Toni I, Roelofs K. (2016). Testosterone and reduced prefrontal control of emotional actions in criminal psychopaths. *eNeuro* 3: 10.1523/ENEURO.0107-15.2016
- Stolk A, D'Imperio D, di Pellegrino G, Toni I (2015) Altered communicative decisions following ventromedial prefrontal lesions. *Current Biology* 25:1469-1474
- de Brouwer A, Smeets J, Gutteling TJ, Toni I, Medendorp WP (2015) Illusions affect visuomotor updating in the dorsal visual stream. *Neuropsychologia* 77:119-127
- Leoné FTM, Monaco S, Henriques D, Toni I, Medendorp WP (2015). Flexible reference frames for grasp planning in human parieto-frontal cortex. *eNeuro* 2:1–15
- Radke S, Volman I, Mehta P, van Son V, Enter D, Sanfey A, Toni I, de Bruijn ERA, Roelofs K. (2015) Ready to go! Testosterone prepares the amygdala for social threat approach. *Science Advances* 1:e1400074
- van Der Schaaf ME, Schmits IC, Roerink M, Geurts DE, Toni I, Roelofs K, De Lange FP, Nater UM, van der Meer JW, Knoop H. (2015) Investigating neural mechanisms of change of cognitive behavioural therapy for chronic fatigue syndrome: a randomized controlled trial. *BMC Psychiatry* 15:144
- Leoné FTM, Heed T, Toni I, Medendorp WP (2014) Understanding effector selectivity in human posterior parietal cortex by combining information patterns and activation measures. *Journal of Neuroscience* 34: 7102-7112
- Stolk A, Noordzij ML, Verhagen L, Volman IAC, Schoffelen JM, Oostenveld R, Hagoort P, Toni I. (2014) Cerebral coherence between communicators marks the emergence of meaning. *Proceedings of the National Academy of Sciences* 111:18183-18188
- Brinkman L, Stolk A, Dijkerman HC, de Lange FP, Toni I (2014). Distinct roles for alpha- and beta-band oscillations during mental simulation of goal-directed actions. *Journal of Neuroscience* 34:14783-14792
- Helmich RC, Thaler A, van Nuenen BFL, Gurevich T, Mirrelman A, Hendler T, Giladi N, Bloem BR, Toni I. (2015) Reorganization of cortico-striatal circuits in healthy G2019S LRRK2 carriers. *Neurology* 84:399-406
- Holler J, Kokal I, Toni I, Hagoort P, Kelly S, Özyürek A (2014). Eye'm talking to you: Speakers' gaze direction modulates the integration of speech and gesture in the right MTG. *Social, Cognitive, and Affective Neuroscience* 10:255-261
- Grabner G, Poser BA, Fujimoto K, Polimeni J, Wald LL, Tractnig S, Toni I, Barth M. (2014). A study-specific fMRI normalization approach that operates directly on high resolution functional EPI data at 7T. *NeuroImage* 100:710-714
- Ferraye MU, Debu B, Heil L, Carpenter M, Bloem BR, Toni I (2014) Using motor imagery to study the neural substrates of balance. *PLOS One* 9: e91183
- Stolk A, Noordzij ML, Volman I, Verhagen L, Overeem S, van Elswijk G, Bloem B, Hagoort P, Toni I. (2014) Understanding communicative actions: a repetitive TMS study. *Cortex* 51:25-34
- Krause F, Lindemann O, Toni I, Bekkering H. (2014) Different brains process numbers differently: structural bases of individual differences in spatial and non-spatial number representations. *Journal of Cognitive Neuroscience* 26:768-76.

- Leoné FTM, Toni I, Medendorp WP (2014) Two-dimensional spatial tuning for saccades in human parietofrontal cortex. *NeuroImage* 87:476-89
- Albers AM, Kok P, Toni I, Dijkerman HC, de Lange FP (2013) Shared representations for working memory and mental imagery in early visual cortex. *Current Biology* 23:1427-1431
- Stolk A, Hunnius S, Bekkering H, Toni I. (2013) Early social experience predicts referential communicative adjustments in five-year-old children. *PLOS One* 8:e72667
- de Boer M, Toni I, Willems R. (2013) What drives successful verbal communication? *Frontiers in Human Neuroscience* 7:622
- Helmich RC, Toni I, Deuschl G, Bloem BR (2013) The Pathophysiology of Essential Tremor and Parkinson's Tremor. *Current Neurology and Neuroscience Reports* 13:378-388
- Stolk A, Verhagen L, Schoffelen JM, Oostenveld R, Blokpoel M, Hagoort P, van Rooij I, Toni I. (2013) Neural mechanisms of human communicative innovation. *Proceedings of the National Academy of Sciences* 110:14574-14579
- Zimmermann M, Toni I, de Lange F (2013) Body posture modulates action perception. *Journal of Neuroscience* 33:5930-5938
- Verhagen L, Dijkerman HC, Medendorp WP, Toni I. (2013) Hierarchical organization of parieto-frontal circuits during goal-directed action. *Journal of Neuroscience* 33:6492-6503
- Volman I, Verhagen L, den Ouden H, Fernández G, Rijpkema M, Franken B, Toni I, Roelofs K (2013) Reduced serotonin-transporter availability decreases prefrontal control of the amygdala. *Journal of Neuroscience* 33:8974-8979
- Verhagen L, Dijkerman HC, Medendorp WP, Toni I (2012) Cortical dynamics of sensorimotor integration during grasp planning. *Journal of Neuroscience* 32:4508-4519
- van Nuenen BFL, Helmich RC, Ferraye M, Thaler A, Hendler T, Giladi N, vd Warrenburg BPC, Bloem BR, Toni I. (2012) Cerebral compensation during motor imagery in preclinical LRRK2-parkinsonism. *Brain* 135:3687-3698
- Volman I, Noordzij NL, Toni I. (2012) Sources of variability in human communicative skills. *Frontiers in Human Neuroscience* 6:310
- van Kesteren M, Blokpoel M, Stolk A, Haselager P, Toni I, van Rooij I. (2012) Recipient design in human communication: Simple heuristics or perspective taking? *Frontiers in Human Neuroscience* 6:253
- Mars RB, Neubert FX, Noonan MAP, Sallet J, Toni I, Rushworth MFS (2012) On the relationship between the 'default mode network' and the 'social brain'. *Frontiers in Human Neuroscience* 6:189
- van Nuenen BFL, Helmich RC, Buenen N, vd Warrenburg BPW, Bloem BR, Toni I (2012) Compensatory activity in the extrastriate body area of Parkinson's disease patients. *Journal of Neuroscience* 32:9546-9553
- Delnooz CCS, Helmich RC, Medendorp WP, Toni I, van de Warrenburg BPC. (2012) Abnormal dorsal premotor-parietal connectivity in writer's cramp: a resting state functional MRI study. *Movement Disorders* 27:1425-1431
- Helmich RC, Hallett M, Deuschl G, Toni I, Bloem BR (2012) Cerebral causes and consequences of parkinsonian resting tremor: a tale of two circuits?. *Brain* 135:3206-3226
- Mars RB, Sallet J, Toni I, Rushworth MFS (2011) Connectivity-based subdivisions of the human right 'temporoparietal junction area' (TPJ): Evidence for different areas participating in different cortical networks. *Cerebral Cortex* 22:1894-1903
- Volman I, Roelofs K, Koch S, Verhagen L, Toni I (2011) Anterior Prefrontal Cortex Inhibition Impairs Control over Social Emotional Actions. *Current Biology* 21:1766-1770

- Willems RM, Benn Y, Hagoort P, Toni I, Varley R (2011) Communication without a functioning language system. *Neuropsychologia* 49:3130-3135
- Delnooz CCS, Helmich RC, Medendorp WP, van de Warrenburg BPC, Toni I (2011) Abnormal planning of writing movements in writer's cramp. *Human Brain Mapping*
- Helmich RC, Janssen ML, Oyen WJ, Bloem BR, Toni I (2011) Pallidal dysfunction drives a physiological cerebello-thalamic circuit into parkinsonian tremor. *Annals of Neurology* 69:269-281
- Helmich RC, Bloem BR, Toni I (2011) Motor imagery evokes increased somatosensory activity in Parkinson's disease patients with tremor. *Human Brain Mapping* 33:1763-79
- Van Rooij I, Kwisthout J, Blokpoel M, Szymanik J, Wareham T, Toni I. (2011) Intentional Communication: Computationally Easy or Difficult? *Frontiers in Human Neuroscience* 5:52
- Blokpoel M, Kwisthout J, Wareham T, Haselager P, Toni I, van Rooij I (2011) The computational costs of recipient design and intention recognition in communication. *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*
- Volman I, Toni I, Verhagen L, Roelofs K (2011) Endogenous testosterone modulates prefrontal-amygdala connectivity during social emotional behavior. *Cerebral Cortex* 21:2282-2290
- Heed T, Beurze SM, Toni I, Röder B, Medendorp WP (2011) Functional rather than effector-specific organization of human posterior parietal cortex. *Journal of Neuroscience* 31:3066-3076
- Snijders AH, Bloem BR, Toni I. (2011) Bicycling breaks the ice for freezers of gait. *Movement Disorders* 26:367-71
- Snijders AH, Leunissen HP, Bakker M, Overeem S, Helmich RC, Bloem BR, Toni I. (2011) Gait-related cerebral alterations in Parkinson patients with freezing of gait. *Brain* 134:59-72
- Noordzij ML, Newman-Norlund S, Newman-Norlund R, de Ruiter JP, Hagoort P, Levinson SC, Toni I (2010) Neural correlates of intentional communication. *Frontiers in Neuroscience* 4:1-7
- Beurze SM, Toni I, Pisella L, Medendorp WP. (2010) Reference Frames for Reach Planning in Human Parietofrontal Cortex. *Journal of Neurophysiology* 104:1736-1745
- Van Pelt S, Toni I, Diedrichsen J, Medendorp WP (2010) Repetition Suppression Dissociates Spatial Frames of Reference in Human Saccade Generation. *Journal of Neurophysiology* 104:1239-1248
- de Lange FP, Toni I, Roelofs K (2010) Altered connectivity between prefrontal and sensorimotor cortex in conversion paralysis. *Neuropsychologia* 48:1782-1788
- Willems RM, Toni I, Hagoort P, Casasanto D (2010) Neural dissociation between action verb understanding and motor imagery. *Journal of Cognitive Neuroscience* 22:2387-400
- Willems RM, de Boer M, de Ruiter JP, Noordzij ML, Hagoort P, Toni I (2010) A cerebral dissociation between linguistic and communicative abilities in humans. *Psychological Science* 21:8-14
- de Ruiter JP, Noordzij ML, Newman-Norlund S, Newman-Norlund R, Hagoort P, Levinson SC, Toni I (2010) Exploring human interactive intelligence. *Interaction Studies* 11:51-77
- Helmich RC, Derikx LC, Bakker M, Scheeringa R, Bloem BR, Toni I (2010) Spatial remapping of cortico-striatal connectivity in Parkinson's disease. *Cerebral Cortex* 20:1175-1186
- Noordzij ML, Newman-Norlund S, de Ruiter JP, Hagoort P, Levinson SC, Toni I (2009) Brain Mechanisms Underlying Human Communication. *Frontiers in Human Neuroscience*, 3: 14
- Willems RM, Toni I, Hagoort P, Casasanto D (2009) Body-specific motor imagery of hand actions: Neural evidence from left- and right-handers. *Frontiers in Human Neuroscience* 3:39
- Majdandžić J, Bekkering H, van Schie HT, Toni I (2009) Movement-specific repetition suppression in ventral and dorsal premotor cortex during action observation. *Cerebral Cortex* 19:2736-2745
- de Lange FP, Koers A, Kalkman JS, Bleijenberg G, Hagoort P, van der Meer JWM, Toni I (2008) Reply to: can CBT substantially change grey matter volume in chronic fatigue syndrome?. *Brain* 132:1-2
- Helmich RC, Aarts E, de Lange FP, Bloem BR, Toni I (2009) Increased dependence of action selection on recent motor history in Parkinson's disease. *Journal of Neuroscience* 29:6105-6113
- Beurze SM, de Lange FP, Toni I, Medendorp WP (2009) Spatial and effector processing in the human parietofrontal network for reaches and saccade. *Journal of Neurophysiology* 101:3053-3062.

- Newman-Norlund SE, Noordzij ML, Newman-Norlund RD, Volman IAC, de Ruiter JP, Hagoort P, Toni I (2009) Recipient Design in Tacit Communication. *Cognition* 111:46-54
- Roelofs K, Minelli A, Mars RB, van Peer J, Toni I (2009) On the neural control of social emotional behavior. *Social Cognitive and Affective Neuroscience* 4:50-58
- De Lange FP, Knoop H, Bleijenberg G, Van der Meer JW, Hagoort P, Toni I (2009) The experience of fatigue in the brain. *Psychological Medicine* 39:523-524
- Grol MJ, Toni I, Lock M, Verstraten FAJ (2009) Spatial representation of overlearned arbitrary visuomotor associations. *Experimental Brain Research* 192:751-759
- de Lange FP, Bauer M, Jensen O, Toni I (2008) Interactions between posterior gamma and frontal alpha/beta oscillations during imagined actions. *Frontiers in Human Neuroscience* 2:7
- de Lange FP, Koers A, Kalkman JS, Bleijenberg G, Hagoort P, van der Meer JWM, Toni I (2008) Cognitive behavioral therapy increases prefrontal grey matter in the chronic fatigue syndrome. *Brain* 131:2172-2180
- Bakker M, Overeem S, Snijders A, Borm G, Van Elswijk G, Toni I, Bloem BR (2008) Motor imagery of foot dorsiflexion and gait: effects on cortico-spinal excitability. *Clinical Neurophysiology* 119:2519-2527
- Verhagen L, Grol MJ, Dijkerman HC, Toni I (2008) Perceptuo-motor interactions during prehension movements. *Journal of Neuroscience* 28:4726-4735
- de Lange FP, Spronk M, Willems RM, Toni I, Bekkering H (2008) Complementary systems for understanding action intentions. *Current Biology* 18:454-457
- Bakker M, de Lange FP, Helmich RC, Scheeringa R, Bloem BR, Toni I (2008) Cerebral control of motor imagery of normal and precision gait. *NeuroImage* (2008) 41:998-1010
- Mars RB, Coles MGH, Hulstijn W, Toni I (2008) Delay-related cerebral activity and motor preparation. *Cortex* 44:507-520
- de Lange FP, Roelofs K, Toni I (2008) Motor imagery: a window into the mechanisms and alterations of the motor system. *Cortex* 44:494-506
- Mars RB, Coles MGH, Hulstijn W, Toni I (2008) Selection, preparation, and monitoring: current approaches to studying the neural control of action. *Cortex* 44:479-481
- Toni I, de Lange FP, Noordzij ML, Hagoort P (2008) Language beyond action. *Journal of Physiology-Paris* 102:71-79
- Grol MJ, Majdandžić J, Stephan KE, Verhagen L, Dijkerman CH, Bekkering H, Verstraten FJ, Toni I (2007) Parieto-frontal connectivity during visually-guided grasping. *Journal of Neuroscience* 27:11877-11887
- Mars RB, Piekema C, Coles MGH, Hulstijn W, Toni I (2007) On the programming and reprogramming of actions. *Cerebral Cortex* 17:2972-2979
- Bakker M, Verstappen CC, Bloem BR, Toni I (2007) Recent advances in functional neuroimaging of gait. *Journal of Neural Transmission* 114:1323-1331
- Majdandžić J, Grol MJ, van Schie HT, Verhagen L, Toni I, Bekkering H (2007) Planning object manipulations according to action goals or action means. *NeuroImage* 37:589-598
- Schneider F, Habel U, Klein M, Toni I, Falkai P, Shah NJ (2007) Neural substrates of olfactory processing in schizophrenia patients and their healthy relatives. *Psychiatry Research: Neuroimaging* 155:103-112
- Bakker M, de Lange FP, Stevens JA, Toni I, Bloem BR (2007) Motor imagery of gait: a quantitative approach. *Experimental Brain Research* 179:497-504
- Helmich RC, de Lange FP, Bloem BR, Toni I (2007) Cerebral compensation during motor imagery in Parkinson's Disease. *Neuropsychologia* 45:2201-2215
- de Lange FP, Roelofs K, Toni I (2007) Increased self-monitoring during imagined movements in conversion paralysis. *Neuropsychologia* 45:2051-2058
- Parkes LM, de Lange FP, Fries P, Toni I, Norris DG (2007) Inability to directly detect magnetic field changes associated with neuronal activity. *Magnetic Resonance in Medicine* 57:411-416
- van den Hurk P, Mars RB, van Elswijk G, Hegeman J, Bloem BR, Toni I (2007) Maintaining sensory and motor representations: effects on cortico-spinal excitability. *Journal of Neurophysiology* 97:1642-1648

- Beurze SM, de Lange FP, Toni I, Medendorp WP (2007) Integration of target and effector information in the human brain during reach planning. *Journal of Neurophysiology* 97:188-199
- de Lange FP, Helmich RC, Toni I (2006) Posture influences motor imagery: an fMRI study. *NeuroImage* 33:609-617
- Pisella L, Binkofski F, Lasek K, Toni I, Rossetti Y (2006) No double-dissociation between optic ataxia and visual agnosia: multiple sub-streams for multiple visuo-manual integration. *Neuropsychologia* 44:2734-2748
- Van Schie HT, Toni I, Bekkering H (2006) A hierarchical view on action: neural mechanisms behind intentions, goals, and means. *Cortex* 42:495-498
- Grol MJ, de Lange FP, Verstraten FAJ, Passingham RE, Toni I (2006) Cerebral changes during performance of overlearned arbitrary visuomotor associations. *Journal of Neuroscience* 26:117-125
- Wenderoth N, Toni I, Bedeleem S, Debaere F, Swinnen SP (2006) Information processing in human parieto-frontal circuits during goal-directed bimanual movements. *NeuroImage* 31:264-278
- Mars RB, Coles MG, Grol MJ, Holroyd CB, Nieuwenhuis S, Hulstijn W, Toni I (2005) Neural dynamics of error processing in medial frontal cortex. *NeuroImage* 28:1007-1013
- de Lange FP, Kalkman JS, Bleijenberg G, Hagoort P, van der Meer JW, Toni I (2005) Grey matter volume reduction in the chronic fatigue syndrome. *NeuroImage* 26:777-781
- de Lange F, Hagoort P, Toni I (2005) Neural topography and content of movement representations. *Journal of Cognitive Neuroscience* 17:97-112
- Habel U, Klein M, Shah J, Toni I, Zilles K, Falkai P, Schneider F (2004) Genetic Load on Amygdala Hypofunction During Sadness in Nonaffected Brothers of Schizophrenia Patients. *American Journal of Psychiatry* 161:1806-1813
- de Lange F, Kalkman J, Bleijenberg G, Hagoort P, van den Werf S, van der Meer J, Toni I (2004) Neural Correlates of the Chronic Fatigue Syndrome. *Brain* 127:1948-1957
- Thoenissen D, Zilles K, Toni I (2002) Differential involvement of parietal and precentral regions in movement preparation and motor intentions. *Journal of Neuroscience* 22:9024-9034
- Toni I, Shah J, Fink GR, Thoenissen D, Passingham RE, Zilles K (2002) Multiple movement representations in the human brain: an event-related fMRI study. *Journal of Cognitive Neuroscience* 14:769-784
- Fink GR, Marshall JC, Weiss PH, Toni I, Zilles K (2002) Task instructions influence the cognitive strategies involved in line bisection judgements: evidence from modulated neural mechanisms revealed by fMRI. *Neuropsychologia* 40:119-130
- Toni I, Rowe J, Stephan KE, Passingham RE (2002) Changes of cortico-striatal effective connectivity during visuomotor learning. *Cerebral Cortex* 12:1040-1047
- Toni I, Thoenissen D, Zilles K, Niedeggen M (2002) Movement preparation and working memory: a behavioural dissociation. *Experimental Brain Research* 142:158-162
- Toni I, Rushworth MFS, Passingham RE (2001) Neural correlates of visuomotor associations: spatial vs arbitrary rules. *Experimental Brain Research* (2001) 141:359-369
- Toni I, Ramnani N, Josephs O, Ashburner J, Passingham RE (2001) Learning arbitrary visuomotor associations: temporal dynamic of brain activity. *NeuroImage* 14:1048-1057.
- Weiss PH, Shah NJ, Toni I, Zilles K, Fink GR (2001) Associating colours with people: a case of chromatic-lexical synaesthesia. *Cortex* 37:750-753.
- Ramnani N, Toni I, Passingham RE, Haggard P (2001) The cerebellum and parietal cortex play a specific role in coordination: a PET Study. *NeuroImage* 14:899-911
- Toni I, Thoenissen D, Zilles K. (2001) Movement preparation and motor intention. *NeuroImage* 14:S110-117
- Passingham RE, Toni I (2001) Contrasting the Dorsal and Ventral Visual Systems: Guidance of Movement versus Decision Making. *NeuroImage* 14:S125-131
- Schneider F, Habel U, Wagner M, Franke P, Salloum JB, Shah NJ, Toni I, Sulzbach C, Honig K, Maier W, Gaebel W, Zilles K. (2001) Subcortical correlates of craving in recently abstinent alcoholic patients. *American Journal of Psychiatry* 158:1075-83

- Ramnani N, Toni I, Josephs O, Ashburner J, Passingham RE (2000) Learning- and expectation-related changes in the human brain during motor learning. *Journal of Neurophysiology* 84:3026-3035
- Fink GR, Marshall JC, Weiss PH, Shah NJ, Toni I, Halligan PW, Zilles K (2000) 'Where' depends on 'what': a differential functional anatomy for position discrimination in one- versus two- dimensions. *Neuropsychologia* 38:1741-1748
- Rowe JB, Toni I, Josephs O, Frackowiak RS, Passingham RE (2000) The prefrontal cortex: response selection or maintenance within working memory? *Science* 288: 1656-1660
- Passingham RE, Toni I, Rushworth MSF (2000) Specialization within the prefrontal cortex: the ventral prefrontal cortex and associative learning. *Experimental Brain Research* 133: 103-113
- Toni I, Passingham RE (1999) Prefrontal-basal ganglia pathways are involved in the learning of arbitrary visuomotor associations: a PET study. *Experimental Brain Research* 127: 19-32
- Toni I, Schluter ND, Josephs O, Friston K, Passingham RE (1999) Signal-, set- and movement-related activity in the human brain: an event-related fMRI study. *Cerebral Cortex* 9: 35-49
- Chua P, Krams M, Toni I, Passingham RE, Dolan R (1999) A Functional Anatomy of Anticipatory Anxiety. *NeuroImage* 1999 9: 563-571
- Toni I, Krams M, Turner R, Passingham RE (1998) The time course of changes during motor learning: a whole brain fMRI study. *NeuroImage* 8: 50-61
- Gentilucci M, Toni I, Daprati E, Gangitano M (1997) Tactile input of the hand and the control of reaching to grasp movements. *Experimental Brain Research* 114: 130-137
- Paulignan Y, Frak GV, Toni I, Jeannerod M (1997) Influence of object position and size on human prehension movements. *Experimental Brain Research* 114: 226-234
- Gentilucci M, Daprati E, Gangitano M, Toni I (1997) Eye position tunes the contribution of allocentric and egocentric information to target localisation in human goal directed arm movements. *Neuroscience Letters* 222: 123-126
- Faillenot I, Toni I, Decety J, Gregoire MC, Jeannerod M (1997) Visual pathways for object-oriented action and object identification. Functional anatomy with PET. *Cerebral Cortex* 7: 77-85
- Toni I, Gentilucci M, Jeannerod M, Decety J (1996) Differential influence of the visual framework on end point accuracy and trajectory specification of arm movement. *Experimental Brain Research* 111: 447-454
- Gentilucci M, Daprati E, Gangitano M, Saetti MC, Toni I (1996) On orienting the hand to reach and grasp an object. *Neuroreport* 7: 589-592
- Gentilucci M, Chieffi S, Daprati E, Saetti MC, Toni I (1996) Visual illusion and action. *Neuropsychologia* 34: 369-376
- Gentilucci M, Daprati E, Toni I, Chieffi S, Saetti MC (1995) Unconscious updating of grasp motor program. *Experimental Brain Research* 105: 291-303
- Gentilucci M, Toni I, Chieffi S, Pavesi G (1994) The role of proprioception in the control of prehension movements: a kinematic study in a peripherally deafferented patient and in normal subjects. *Experimental Brain Research* 99: 483-500
- Amici R, Zamboni G, Perez E, Jones CA, Toni I, Culin F, Parmeggiani PL (1994) Pattern of desynchronized sleep during deprivation and recovery induced in the rat by changes in ambient temperature. *Journal of Sleep Research* 3: 250-256

Contributions to books

- Stolk A, Basnakova J, Toni I (2021) Joint epistemic engineering: The neglected process of context construction in human communication. In: Routledge Handbook of Neurosemiotics (Ibanez A, Saravia SS, eds).
- Toni I, Stolk A (2019) Conceptual Alignment as a Neurocognitive Mechanism for Human Communicative Interactions. In: Handbook of Human Language (Hagoort P, ed.). MIT Press, Cambridge
- Kaldewaij R, Koch SBJ, Volman I, Toni I, Roelofs K (2017) On the Control of Social Approach–Avoidance Behavior: Neural and Endocrine Mechanisms. In: Current Topics in Behavioral Neurosciences

- Stolk A, Blokpoel M, van Rooij I, Toni I (2015) On the generation of shared symbols. In: Cognitive Neuroscience of Natural Language Use (Willems R. ed.). Cambridge University Press, Cambridge
- de Ruiter JP, Noordzij ML, Newman-Norlund S, Newman-Norlund R, Hagoort P, Levinson SC, Toni I (2012) Exploring human interactive intelligence. In: Experimental Semiotics. Studies on the emergence and evolution of human communication (Galantucci B, Garrod S, eds.). John Benjamins Publishing, Amsterdam
- Roelofs K, Toni I, de Lange FP (2012) Action control in conversion paralysis: evidence from motor imagery. In: Psychogenic Movement Disorders and Other Conversion Disorders (Hallett M, ed). Cambridge University Press, Cambridge
- de Ruiter JP, Noordzij ML, Newman-Norlund S, Newman-Norlund R, Hagoort P, Levinson S, Toni I (2007) On the origin of intentions. In: Sensorimotor foundation of higher cognition (Haggard P, Rossetti Y, Kawato M, eds.). Oxford University Press, Oxford
- Toni I (2008) Sequential event processing: Domain specificity or task specificity? In: Time to Speak: Cognitive and Neural Prerequisites for Time in Language (Indefrey P, Gullberg M, eds.). Blackwell Publishing, Malden
- Toni I, Bekkering H (2007) Motor control. In: Brein te Kijk (Wijnen F, Verstraten FAJ, eds). Swets & Zeitlinger, Lisse
- Kleinschmidt A, Toni I (2004) Functional magnetic resonance imaging of human motor cortex. In Motor cortex in voluntary movements (Riehle A, ed). CRC, Boca Raton
- Toni I, Passingham RE (2003) Movement preparation: neuroimaging studies. In The Bereitschaftspotential (Jahanshahi M, Hallett M, eds). Kluwer Academic, London
- Passingham RE, Toni I, Schluter N, Rushworth MFS (1998) How do visual instructions influence the motor system? In: Sensory Guidance of Movement (Bock GR, Goode J. eds), pp. 129-146. Wiley, Chichester
- Gentilucci M, Daprati E, Saetti MC, Toni I (1997) On the role of the egocentric and the allocentric frame of reference in the control of arm movements. In: Parietal Lobe Contribution to Orientation in 3D Space (Karnath HO, Theis P. eds), pp 339-354. Springer-Verlag, Berlin