CURRICULUM VITAE

Maria Concetta Morrone

Professor of Physiology

Department of Translational Research on New Technologies in Medicine and Surgery

University of Pisa

E-Mail: concetta@in.cnr.it; cell +39 3483972198

May 2017

SUMMARY

Maria Concetta Morrone graduated in Physics from the University of Pisa in 1977 and trained in Biophysics at the Scuola Normale Superiore from 1973 to 1980. Following research positions in the Department of Psychology of the University of Western Australia, the Scuola Normale Superiore of Pisa, and the CNR Institute of Neuroscience, she was appointed Professor of Psychophysiology in the Faculty of Psychology of the Università Vita-salute S Raffaele Milan in 2000. From 2008 she is Professor of Physiology of the School of Medicine of University of Pisa. She has been awarded major national and international prizes for scientific achievements, including the inaugural *Campbell Award* for Australian Neuroscience, the National Prize for Physiopathology from the *Accademia dei Lincei* (2002), the Perception Lecture (Budapest: 2004), and the Kofka Prize in development and perception (Giessen: 2011).in 2014, she was elected member of the prestigious Accademia dei Lincei. From an initial interest in biophysics and physiology, where she made many seminal contributions, she moved then on to psychophysics and visual perception. Her research career has been dedicated to understanding the function of the mammalian visual system, where she has made many important contributions fundamental in shaping the field. The research involves the study of both humans and animals using a variety of techniques, including psychophysics, electro-physiology, functional brain imaging, computational modelling and artificial intelligence. The simultaneous mastery of all these techniques has made it possible to tackle a wide spectrum of problems, approaching each problem from a different perspective in a truly interdisciplinary manner. Over the years the research has spanned most active areas of vision research, including spatial vision, development, plasticity, attention, colour, motion,

robotics, vision during eye movements and more recently multisensory perception and action. Prof. Morrone has published some 150 publications in excellent international peer-review journals, including *Nature* and her sister journals, *Neuron*, *Current Biology* and *Trends in Neuroscience*. During the course of her career she has established three new laboratories in Perth, Pisa, and Milan, all with state-of-the-art technology and all still active and productive. She is Chief Editor of major specialized journals and one of the founding editors of the first Open Access journal in Life Sciences.

Education

1977: BSc (cum laude) in physics, Pisa University

1977-1981: Doctoral Fellowship in biophysics, *Scuola Normale Superiore*, Pisa

1978: Fellowship from *Universitatsgesellschaft*, University of Ulm, Gemany

1981-1995: *Ricercatore* ("Assistent Professor"), *Scuola Normale Superiore*, Pisa.

1982-1987: Senior Research Officer, Department of Psychology, University of Western Australia.

1995-2000: *Primo Ricercatore* ("Principal Scientist"), *Istituto di Neurofisiologia* CNR, Pisa.

2000 Acting director of the *Istituto di Neurofisiologia* CNR.

2000-2008 Professor of Psychophysiology, Faculty of Psychology, *Università Vita-Salute San Raffaele*, Milan.

2008- Professor of Physiology (BIO/09) Medical School, University of Pisa.

2008- Part-time Senior Researcher -Robotics, Brain and Cognitive Sciences Department - Italian Institute of Technology (IIT)- Genova

2008- Director of Vision Laboratory , IRCCS Fondazione Stella Maris, - Pisa

PRIZES and HONOURS:

1987 Campbell Award from the Australian Neuroscience Society.

2002 Accademia Dei Lincei: "*Premio Nazionale del Ministro per i Beni e le Attività Culturali*" for Physiology and Pathology.

2004 *The Perception Lecture*, European Conference of Visual Perception, Budapest.

2006 Elected member of the International Neuropsychology Symposium

2011 The Koffka Medal in development and perception, Giessen

2012 Program committee Forum for European Neuroscience Society (FENS)

2013 Awardee of an ERC-IDEA Advanced Grant

2014 Member (Socio Corrispondente) of the Accademia dei Lincei – "Classe di Scienze di Fisiche, Matematiche e Naturali, Categoria V - Sezione Fisiologia, Farmacologia e Neuroscienze".

RECENT PROFESSIONAL RESPONSIBILITIES:

Founding editor of *Journal of Vision* (2000-2012), the first fully electronic journal in neuroscience.

Member of the Editorial Board (1992-1996) and **Section Editor** of the Computational Vision Section (1997-2000) of *Vision Research*.

Founding Editor in Chief (2010-2015) of Journal *Multisensory Research*

Editor and Advisor Board Member (2015-present) of *Scientific Report* of Nature Publishing Group

Associate Editor (2017) of Journal of Neuroscience

Faculty Member (2017) of Faculty 1000 Prime

Editorial Board (2016) of *Neuroscience Research*

Guest Editor (2016) Volume 29, Special Issue on "Hot Topics in Multisensory Processing Selected articles from the IMRF 2015 — 16th International Multisensory Research Forum, Pisa," with M. Ernst

Scientific Advisory Committee Member (2014-) of the Département d'Etudes Cognitives of the Ecole Normale Supérieure, Paris.

Panel Member (2016-) of ERC LS5 advance grants

Coordinator (2017 -) of the Master Degree in Neurosciences, University of Pisa

Member (2015-) of Consiglio Scientifico Imago 7

Member of the selection committee of Visual Science Society (VSS) Board 2007-2008.

Editor of the 50-year celebration issue of *Vision Research*

Member (2005-2006) and chair (2006-2007) of the quality control committee for the University *Vita-Salute "San Raffaele"*.

Member (2011-2012) of the Research Committee for bio-science of Pisa University

Italian National Contact Point (2011 -2014) of the COST Action TIMELY

Guest Editor (2007) Special Issue "Image Perception" of the EURASIP Journal on Applied Signal Processing.

Guest Editor (2011) of the special issues **50th anniversary of Vision Research**

Conference Organization:

Organiser of the "15th European conference on visual perception" (ECVP) in Pisa 1992.

Organiser (together with Giovanni Cioni, David Burr and Adriana Fiorentini) of the 5th Meeting of the Child Vision Research Society, Pisa, 1997.

Organiser of the "3rd Annual Vision Research Conference – Pre-attentive and Attentive Mechanisms in Vision" Fort Lauderdale, Florida, USA, 1997, with other members of the Editorial Board of *Vision Research*.

Organiser of symposium "The Neural Mechanisms of Time" for the International Neuropsychology Society (INS), Teneriffe 2008**.**

Organiser of the international symposium "**Multi-sensory space perception**" with Prof. Burr, Sandini and Gori, Sestri Levante 19-21 Luglio 2011

Organiser of the international symposium "**Active Vision**" with Prof. Burr. S Elia a Pianisi (CB) 12-19 June 2013.

Organiser of symposium "**Multisensory neural maps for body schema,action and perception: development and dysfunction"** with Prof Ladavas and Roeder for the International Neuropsychology Society (INS), Nerja- Málaga, Spain 25-29 June, 2013

Member of the Organizer Committee of the XV Congress of the Italian Society of Neuroscience **Rome 3-5 Ottobre 2013**

Program Committee Member FENS FORUM 2014

International Forum of Multisensory research, Pisa 12-16 June 2015 with Roberto Arrighi and Marco Cicchini

Other positions

Visiting Scholar 1994-1997 Boston University - Dept. of Biomedical Engineering.

Adjunct Professor (2001-2004) of the Department of Psychology of the University of Western Australia.

Visiting Professor (2001) Center for Neuronal Science - New York University NY.

Distinguished Scholar (2002) Smith-Kettlewell Eye Research Institute, San Francisco, for collaborative research with Susanne McKee and Preeti Verghese.

Consultant for the "Fondazione Stella Maris" (1998-2013) – Center for research in developmental neurology and neuro-rehabilitation.

CONSULTANT FOR THE FOLLOWING FUNDING AGENCIES:

European Community – 4 th, 5 th, 6th and 7 th Framework Program (both for *Life Science* and *Information Society Technologies* calls)
Panel Member of ERC - Advanced grant
Reviewer for ERC program – Young Investigator Award
MIUR - IT
Reviewer for Human Frontier Science Program
"National Science Foundation" (USA).
Australian Research Council.
Health Research Council of New Zealand
"The Wellcome Trust"- UK
"Biotechnology and Biological Sciences Research Council" – UK
French National Grants "ACI 2002"
French National Grants "CNRS ATIP"

Habitual referee for

Science
Nature Neuroscience
Neuron
Current Biology
Journal of Neuroscience
Cerebral Cortex
Trends in Cognitive Sciences
Brain
Proceedings of The Royal Society
Journal of Optical Society of America
Journal Neurophysiology
Journal Physiology
Perception
Perception and Psychophysics.
Spatial Vision
Psychopharmacology
Visual Neuroscience.
Vision Research
European Journal of Neuroscience.

Recent Public lectures and out-reach activity:

Infinitamente: Fattore Umano Cervello e coscienza. March 2010, Verona

7Th World Conference Future of Sciences. Mind: the essence of humanity. September 2011, Venice

Infinitamente: Tempo, Spazio ed Infinito. March 2012, Verona

Accademia Nazionale dei Lincei. Lecture to the general public on "Lo spazio, il tempo e I numeri nel cervello" Gennaio 2013

Coordinator of Polo del Molise (2013 -) "Fondazione Lincei per la Scuola".

Coordinator of Polo Scuola Normale Superiore e Lincei per la scuola (2017 -) "Fondazione Lincei per la Scuola".

Member (2016) of 100 ESPERTE

Member (2015) of Top Italian Scientists

SUMMARY OF PUBLICATIONS (current on 5-2017)

Journal	**N Pubs**	**IF**	**Total Imp**
Nature	8	22.3	178.4
*Trends in Neurosc (*TINS)	2	18	36.0
Nature Neuroscience	5	15	75.0
Neuron	1	14	14.0
Plos Biology	2	11.9	23.8
Current Biology	15	10.9	163.5
J. of Neuroscience	12	8.4	100.8
Cortex	1	6.08	6.08
J. Physiology	5	4.8	24.0
J. of Cognitive Neurosc	2	4.5	9.0
Neuroimage	1	6.4	6.4

Scientific Report	1	5.6	5.6
J. Neurophysiology	6	3.9	23.4
Trends in Cog Science (TICS)	1	9.7	9.7
Proc. Roy. Soc.	11	4.6	50.6
Neuroreport	1	2.9	2.94
Philos Trans of Biol Scienc B	1	6.05	6.05
Plos One	2	4.4	8.8
Neuropsychologia	1	4.2	4.2
European J Neuroscience	1	3.9	3.9
J of Vision	15	4.2	62.4
Inv. Ophtal Vis Scie	1	3.6	3.6
Vision Res.	34	2.2	74.8
Exp Brain Res.	8	2.4	19.2
Behav Res Methods	1	3.9	3.9
Visual Neuroscience	7	2.1	14.7
Brain Res.	1	2.8	2.8
Behav. Brain Res	2	2.6	5.2
J. Opt. Soc. Am.	3	2	6
Int. J. Psychophy	1	2.2	2.2
Perception	3	1.1	3.3
Multisensory Research	2	1	2
Pattern Recognition Letters	2	0.95	1.9
Frontiers in System Neurosc	1		
Book chapters:			
Review on invitation	***15***		
others	**11**		
Total	**185**		**946.4**

On 5-2017: Citations **(ScHolar Index): 11413. Hirsch factor: 55**

RECENT MAJOR GRANTS

"PRIN Miur" (2006-2007) National coordinator of project: "Dynamic vision: keeping vision stable in the face of continual eye-movements.".

FP6-2005-NEST-Path (2007-2010) "MEMORY". Coordinator, with partners: University of Marburg – Germany; University of Applied Science – Ticino – Switzerland; IIT CNR Pisa –

Italy.

"PRIN Miur" (2008-2010) National coordinator of project: "Keeping vision stable in the face of continual eye-movements".

ISA-2010: Coordinator Prof Lacquaniti. 2011-2012. " Fusione audio-visiva"**.**

"PRIN Miur" (2011-2013) National Coordinator of project: "Neuronal mechanisms for the perception of space, time and number"

"Marie Curie International Outgoing Fellowship" (2011-2014) European Union - 7th Framework Programme – Project "AWESoMe" Coordinator. Beneficiary Dr Paola Binda

ERC- IDEA Advanced Grant (2014-2019) 7th Framework Programme **"**Early Cortical Sensory Plasticity and Adaptability in human adults: **ECSPLAIN" 2014-2019**

"Marie Curie ITN" – Horizon 2020 (2015- 2019) "Training the Next Generation of European Visual Neuroscientists for the benefit of innovation in health care and high-tech industry**" 2015-2019**

Fondazione Roma – (2015-2018) "Cortical Plasticity in Retinitis Pigmentosa: an integrated study from animal models to humans" . Coordinator

"PRIN Miur" (2016-2019) "Adult visual cortex plasticity: from animal models to humans". Coordinator

RESEARCH INTERESTS

My research career has been dedicated to studying the function of the mammalian visual system. The research has involved studying both humans and animals using a variety of techniques, including psychophysics, electro-physiology, functional brain imaging, computational modelling and artificial intelligence. The simultaneous use and mastering of all these techniques has made it possible to tackle a wide spectrum of problems and to approach each problem from different levels and perspectives in a truly interdisciplinary manner. Over the years the research has spanned almost all active areas of vision research, including spatial vision, development, attention, colour, motion, robotics and vision during eye movements.

Many of my main scientific achievements have been reviewed in text book and several reviews (for example: "Neuronal operation in the visual cortex", ed. G. Orban, Spring-Verlag 1984 ; "Human Brain Elettrophysiology", ed. Regan, Elsevier, 1989 ; "Perception", ed. R. Sekuler e R. Blake, Knopf, New York, 1985; "The neuronal basis of visual function", ed. Leventhal, Macmillan Press, 1991 and several more recent chapters and text books).

Several commentaries have been written on some of my work in major journals like *Nature* ("News and Views") Braddick (Vol. 320, pp. 680-681,1986), Morgan (Vol 371, pp. 473, 1994) Miller e Bockisch (Vol386, pp. 550-551, 1997); on *Current Biology* by Husain, M. & Jackson, S. R. (*Curr Biol* **11**, R753-5, 2001); on "News and Views" of Nature Neuroscience by Eagleman (July 2005); in the "Book Review" section of *Science* by Prof. R. Shapley (Vol. 256, pag. 1837, 1992) and also in general public science magazines like Focus, KOS, Galileo, Quaderni Molisani, Ipovisione and L'Ala.

Some of the scientific results and the developed technology have been transferred and applied to the field of bio-technology (eg. the equiluminant VEP) and to computer vision (the edge detection and motion detection algorithms).

Below I give a very brief account of the major contributions. The numbers refer to publications list enclosed to the CV. Some more recent interests are omitted for brevity.

Perception during eye-movements

A long-standing problem for visual perception, that has occupied much of my research career, is why the world remains stable in the face of continual eye-movements called saccades (spontaneous ballistic movements occurring about three times per second). There are two broad aspects to the problem: why the image motion generated by the eye movement is not sensed; and how is a stable allocentric map maintained. Psychophysical studies by my group suggest that motion produced by saccadic motion is not sensed because it is actively suppressed at the time of saccades [47]; however, the suppression is not total, but limited to the magnocellular pathway [47,56, 60, 74,75, 96], the pathway primarily responsible for motion perception.

An even more challenging problem is how the world remains stable in the face of shifts in the retinal images brought about by saccades. We have shown that despite this apparent perceptual stability, around the time of saccades briefly displayed objects are systematically mislocated in a complex way. Objects tend to be seen near the saccadic target (the intended landing point of the saccade), causing a strong compression of visual space [64, 66, 77, 83, 89]. These psychophysical studies have now been replicated in several laboratories, and very strong parallels have been found in the behaviour of cell populations. The exact purpose of this compression is not yet clear, but it is almost certainly instrumental in facilitating the smooth transition from one fixation to another. Interestingly, the compression occurs only for perceptual judgements, and is not present when subjects indicate their responses by blind pointing [81, 93], reinforcing suggestions for separate maps for perception and action. More recent work suggests that there may also be a parallel compression in time during saccades [90]: the strong linked alteration of space and time is suggesting an interesting mathematical model to explain the neuronal basis of the compression and the perceptual stability despite the continual eye movements.

Our normal experience is the information derived from one fixation is transferred to the next, but how and where do we construct a stable *spatiotopic* representation of the world centered in real-world external coordinates from the successive retinal “snapshots” of each fixation it is still largely unknown. Recently psychophysical studies by my group have shown that linear integration occurs for motion signals that are individually below threshold and are presented at the same location in the external space, but at different eccentricities [85]. Using fMRI, we went on demonstrating that the retinotopic representation of motion becomes transformed into the *spatiotopic* representation that we perceive, anchored in stable real-world coordinates, at level of the area MT+ (an early cortical region specialized in the analysis of motion) [107]. Another example of spatiotopic neuronal mechanisms is the demonstration of spatially specific adaptation of event-time [106], a clear demonstration that the flow of time is constantly measured in parallel by a multitude of neuronal clocks linked to the spatial coordinate.

Perception of visual features

An important and long-studied problem for form perception is how the visual system detects and identifies important visual features, such as lines and edges (and illusory features, such as *Mach Bands* [21, 29]). I developed a simple but biologically plausible model of feature detection based on "local energy" [24, 26, 41, 42, 55], that successfully detects and identifies lines and edges in natural images, with high tolerance to noise, and which successfully predicts human performance and a series of visual illusions, new and old [48, 65], as well as our ability to perceive face symmetry [84] and transparency. More recent experiments using fMRI have revealed the neuronal circuits in human brain that may mediate the computation of the local energy [92].

Motion Perception

Together with David Burr, who was the first to understand the importance of the "spatio-temporal receptive field" for motion detectors, a concept lying at the heart of many models of motion, we have studied how the form of moving objects is analyzed, veridically, without significant smear and the parameters of the RF for early visual motion analysis [18, 19, 36, 67, 95]. We have also demonstrated the existence in the human visual system of mechanisms specialised for the complex "optic flow" motion (including radial and circular motion), by both psychophysical [54, 73, 85] and imaging techniques [76]. These detectors parallel strongly the neurons that have been described in visual area MSTd of the macaque monkey. Other similar work characterised the properties of "biological motion" [70].

Cortical inhibition and its functional significance

One of the primary characteristics of visual cortical neurons is that they are selective for stimulus orientation. Together with David Burr, I demonstrated that the neurons do not encode orientation independently of each other, but exert a mutual inhibition on each other. This was first demonstrated in cats, then in humans, using evoked potential techniques [7,25]. We also showed that the inhibition plays an important functional role in helping to delineate perceptual contours [8]. Furthermore, we showed that the inhibitory interaction in infants are not present at birth but develop at around 9 months of age [15]. We studied directly the GABAergic circuitry during development in the LGN and visual cortex of kitten and their plasticity and recover after variable periods of monocular deprivation [10, 11, 22, 34, 35] and in adult human after short term deprivation [170] using ultra-high field MR-SPECT. At present, 20 years after these first demonstrations, it is well accepted that the development of GABAergic inhibition is a crucial factor in delimiting the critical period of plasticity.

Other electrophysiological studies in cat and monkey have addressed the neuronal selectivity of primary and intra-parietal neurons in cat [2, 3, 20] and the colour selectivity of monkey retinal ganglion cells and their contribution to P-ERG in monkey and humans [49, 50].

Color Vision

The major goal of these studies was the characterization of the development of colour vision in infants, aiming to determine the possible difference in maturation of the magno- and parvo-cellular pathways [30, 44, 59]. Contrary to expectations, we demonstrated that the colour pathways follow a rapid development, once luminance contrast sensitivity approaches adult levels. To achieve these goals it was necessary to develop a new Visual Evoked Potential technique that could isolate specifically the chromatic response. The technique has been

developed commercially, and is currently used as early diagnostic tool in many clinical units. My research group has used it to demonstrate a higher susceptibility of the magno-cellular pathways and/or of the dorsal stream with age in normal subjects [39, 57], in neglect patients [52], in the reorganization of brain function in infants with cerebral lesions [72].

Other studies on color vision have characterized the spatial [53, 58] and temporal properties [43, 69] of early neuronal mechanisms, and examined how those are differentially modulated by attention [79, 82, 87].

Plasticity in adult and child vision revealed by brief monocular deprivation

We have recently devised an innovative technique that reveals an unexpectedly high degree of plasticity for ocular dominance in adult humans [132, 167, 170]: after only 2.5 hours of monocular eye-patching, *binocular rivalry* – a process thought to rely heavily on inhibitory mechanisms – becomes biased ***in favour of the deprived eye***. The effect can persist for up to three hours, longer than the deprivation period. Two aspects of this study are extremely surprising. The first is the longevity of the effect, lasting more than 3 hours for chromatic gratings, longer than the deprivation period. This distinguishes the effect from the standard forms of contrast adaptation, which typically asymptote after a few seconds. The other surprising aspect is that the bias is *in favour* of the deprived eye. Monocular deprivation in animals always results in reduction of the effectiveness of the deprived eye, reflecting reduced thalamic afferent connections, leading to changes cortical ocular dominance. That brief periods of deprivation have the opposite effect in adult cortex is fascinating, implicating different forms of plasticity or different mechanisms in the early stages of plasticity.

Publications

(Some downloadable: http://www.pisavisionlab.org/index.php/people/faculty/morrone**)**

1 Maffei, L., Morrone, M.C., Pirchio, M. & Sandini, G. (1979) A perceptual phenomenon and its neurophysiological correlate. *Perception* **8** 43-46.

2 Maffei, L., Morrone, M. C., Pirchio, M. & Sandini, G. (1979) Response of visual cortical cells to periodic and non-periodic stimuli. *J. Physiol.* **296** 27-47.

3 Hoffmann, K.P., Morrone, C. & Reuter, J.H. (1980) A comparison of the response of simple cells in the LGN and visual cortex to bar and noise stimuli in cat. *Vision Research* **20** 771- 777.

4 Burr, D.C., Morrone, M.C. & Maffei, L (1981) Intracortical inhibition prevents simple cells from responding to textured patterns. *Exp. Brain Res.* **43** 455-458.

5 Cattaneo, A., Maffei, L. & Morrone, M. C. (1981) Patterns in the discharge of simple and complex visual cortical cells. *Proc. Roc. Soc. (Lond.) B* **212** 279-297.

6 Cattaneo, A., Maffei, L. & Morrone, C. (1981) Two firing patterns in the discharge of complex cells encode different attributes of the visual stimulus. *Exp Brain Research* **43** 115-118.

7 Morrone, M.C., Burr, D.C. & Maffei, L. (1982) Functional implications of cross-orientational inhibition of cortical visual cells. Part I Neurophysiological evidence. *Proc. Roy. Soc. (London)* **B216** 335-354.

8. Morrone, M.C., Burr, D.C. & Ross, J. (1983) Added noise restores recognition of coarse quantised images. *Nature* **305** 226-228.

9. Morrone, M.C., Burr, D.C. & Ross, J. (1984) Noise and recognizability of coarse quantized images. *Nature* **308** 214.

10. Berardi, N. & Morrone, M. C. (1984) The role of γ-aminobutyric acid mediated inhibition in the response properties of cat lateral geniculate nucleus neurones. *J. Physiol.* **357** 505- 523.

11. Berardi, N. & Morrone, M.C. (1984) Development of γ-aminobutyric acid mediated inhibition of X cells of the cat lateral geniculate nucleus. *J. Physiol.* **357** 525-537.

12. Burr, D.C., Ross, J. & Morrone, M.C. (1985) Local regulation of luminance gain *Vision Res.* **25** 717-728.

13. Di Stefano, M, Morrone, M.C. & Burr, D.C. (1985) Spatial acuity of cells of the post medial lateral suprasylvian gyrus *Brain Res.* **331** 382-385.

14. Burr, D.C., Ross, J. & Morrone, M.C. (1986) A spatial illusion from motion rivalry. *Perception* **15** 59-66.

15. Morrone, M.C. & Burr, D.C. (1986) Evidence for the existence and development of visual inhibition in humans. *Nature* **321** 235-237.

16. Burr, D.C., Morrone, M.C. & Ross, J. (1986) Local and global visual analysis. *Vision Res.* **26** 749-757.

17. Hayes, T., Morrone, M.C. & Burr, D.C. (1986) Recognition of band-pass filterred positive and negative band-pass filtered images. *Perception* **15** 595-602.

18. Burr, D.C., Ross, J. & Morrone, M.C. (1986) Seeing objects in motion *Proc. Roy. Soc. (Lond)* **B227** 249-265.

19. Burr, D.C., Ross, J. & Morrone, M.C. (1986) Smooth and sampled motion. *Vision Research* **26** 643-652.

20. Morrone, M.C., Di Stefano, M. & Burr, D. (1986) Spatial and temporal selectivity of neurones of the lateral suprasylvian gyrus of the cat. *J. Neurophysiol.* **56** 969-986.

21. Morrone, M.C., Ross, J., Burr, D.C. & Owens, R. (1986) Mach bands are phase dependent. *Nature* **324** 250-253.

22. Morrone, M.C., Burr, D.C. & Speed, H.D. (1987) Cross-orientation inhibition in cat is GABA mediated. *Exptl. Brain Res.* **67** 635-644.

23. Burr, D.C., Fiorentini, A. & Morrone, M.C. (1987) Electrophysiological correlates of positive and negative afterimages. *Vision Res.* **27** 201-207.

24. Morrone, M.C. & Owens, R. (1987) Feature detection from local energy. *Pattern Rec. Letters.* **1** 103-113.

25. Burr, D.C. & Morrone, M.C. (1987) Inhibitory interactions in the human visual system revealed by pattern evoked potentials. *J. Physiol. (Lond.)* **209** 1-21.

26. Morrone, M.C. & Burr, D.C. (1988) Feature detection in human vision: a phase-dependent energy model. *Proc. Roy. Soc.* **B 235** 221-245.

27. Morrone, M.C., Burr, D.C. & Spinelli, D. (1989) Discrimination of spatial phase in central and peripheral vision. *Vision Res.* **29** 433-445.

28. Burr, D.C., Morrone, M.C. & Spinelli, D. (1989) Evidence for the existence of bar and edge detectors in human vision. *Vision Res.* **29** 419-431.

29. Ross, J., Morrone, M.C. & Burr, D.C. (1989) The conditions for the appearance of Mach bands. *Vision Res.* **29** 699-715.

30. Morrone, M.C., Burr, D.C. and Fiorentini, A. (1990) Development of infant contrast sensitivity and acuity to chromatic stimuli *Proc Roy Soc B* **242** 134-139.

31. Burr, D.C. & Morrone, M.C. (1990) Edge detection in biological and artificial visual systems. In *Vision: coding and efficiency* (pp185-194) edited by Colin Blakemore, Cambridge University Press, Cambridge.

32. Burr, D.C. Morrone, M.C. & Fiorentini, A. (1991) Development of infant contrast sensitivity and acuity for coloured patterns. In *Advances in understanding visual processes.* pp 185- 188 (Edited by A. Valberg and B.B. Lee). Plenum Press, Berlin.

33. Fiorentini, A., Burr, D.C. & Morrone, M.C. (1991) Temporal characteristics of colour vision: VEP and psychophysical measurements. In *Advances in understanding visual processing.* pp 139-150 (Edited by A. Valberg and B.B. Lee). Plenum Press, Berlin.

34. Morrone, M.C., Speed, H.D. & Burr, D.C. (1991) Development of inhibitory interactions in kittens. *Visual Neuroscience* **7** 321-334.

35. Speed, H.D., Morrone, M.C. & Burr, D.C. (1991) The effects of monocular deprivation on the development of visual inhibitory interactions in kittens. *Visual Neuroscience* **7** 335- 344.

36. Anderson, S.J., Burr, D.C. & M.C. Morrone (1991) The two-dimensional spatial and spatial frequency properties of motion sensitive mechanisms in human vision. *J. Opt. Soc. Am.* **A 8** 1340-1351.

37. Porciatti, V., Burr, D.C., Fiorentini, A.F. & Morrone, M.C. (1991) Spatio-temporal properties of the pattern ERG and VEP. In *The changing visual system* pp209-217 (Edited by P.Bagnoli & W.Hodos). Plenum Press, New York.

38. Morrone, M.C. & Burr, D.C. (1992) Meccanismi visivi per la percezione di strutture e caratteristiche di immagini. *Sistemi Intelligenti* **4** 7-28.

39. Porciatti, V., Burr, D.C., Morrone, M.C. and Fiorentini, A. (1992) The effects of ageing on the pattern electroretinogram and visual evoked potential in humans. *Vision Res.* 1199- 1209.

40. Burr, D.C., Morrone, M.C. & Fiorentini, A. (1992) Electro-physiological investigation of edge-selective mechanisms of human vision. *Vision Research* **32** 239-247.

41. Burr, D.C. & Morrone, M.C. (1992) A non-linear model of feature detection. In *Non-linear vision.* pp309-328 (Edited by R.B. Pinter and B. Nabet). CRC Press, Inc., .

42. Morrone, M.C. & Burr, D.C. (1993) A model of human feature detection based on matched filters. In *Robots and biological systems: Towards a new Bionics?* pp43-64 (Edited by Dario, P., Sandini, G. & Aebischer, P.). Springer-Verlag, Berlin.

43. Burr, D.C. & Morrone, M.C. (1993) Impulse response functions for chromatic and achromatic stimuli. *J. Opt. Soc. Am. A* **10** 1706-1713.

44. Morrone, M.C., Burr D.C. & Fiorentini, A. (1993) Development of infant contrast sensitivity to chromatic stimuli. *Vision Research,* **17** 2535 - 2552.

45. Burr, D.C. & Morrone, M.C. (1994) Constructing a neural sketch from visual images In *Representation: relationship between language and image* pp 9-25 (Edited by S. Levialdi and C. Bernardelli). Word Scientific, .Singapore.

46. Burr, D.C. & Morrone, M.C. (1994) The role of features in constructing visual images. In *Higer-order processing in the visual system.* Ciba Found Symp. 1994;184:129-41; discussion 141-6, 269-71. (Edited by M.J. Morgan). John Wiley, London.

47. Burr, D.C., Morrone, M.C. & Ross, J. (1994) Selective suppression of the magnocellular visual pathway during saccadic eye movements. *Nature* **371** 511-513.

48. Morrone, M.C., Burr, D.C. & Ross, J. (1994) Illusory brightness step in the Chevreul illusion. *Vision Res.* **34** 1567-1574.

49. Morrone, M.C., Porciatti, V., Fiorentini, A. & Burr, D.C. (1994) Pattern-reversal electroretinigram in response to chromatic stimuli: I Humans *Visual Neuroscience* 861-871.

50. Morrone, M.C., Fiorentini, A., Bisti, S, Porciatti, V. & Burr, D.C (1994) Pattern-reversal electroretinogram in response to chromatic stimuli: II monkey. *Visual Neuroscience* 873-884.

51. Porciatti, V., Morrone, M.C., Fiorentini, A., Burr, D.C. & Bisti, S. (1994) The pattern electroretinogram in response to colour contrast in man and monkey. *Intnl. J. Psychophysiology* 185-189.

52. Spinelli, D.S., Burr, D.C. & Morrone, M.C. (1994) Spatial neglect is associated with increased latencies of visual evoked potentials. *Visual Neuroscience* 909-918.

53. Girard, P. & Morrone, M.C. (1994) Spatial structure of chromatically opponent receptive fields in human visual system *Visual Neuroscience* **12** 103-116.

54. Morrone, M.C., Burr D.C. & Vaina, L. (1995) Two stages of visual processing for radial and circular motion.. Nature **376** 507-509.

55. Morrone, M.C., Navangione, A. & Burr, D. (1995) An adaptive approach to scale selection for line and edge detection. *Pattern Rec. Letters* **16** 667-677.

56. Burr, D.C. & Morrone, M.C. (1996) Temporal impulse response functions for luminance and colour during saccades. *Vision Research* **36** 2069-2078.

57. Fiorentini, A., Porciatti, V. Morrone, M.C. & Burr, D.C. (1996) Visual ageing: unspecific decline of the response to luminance and colour. *Vision Research* **36** 3557-3566.

58. Martini, P., Girard, P., Morrone, M.C. & Burr, D. (1996) Sensitivity to spatial phase at equiluminance *Vision Res.* **36** 1153-1162.

59. Morrone, M.C., Fiorentini, A.F. & Burr, D.C. (1996) Development of the temporal properties of visual evoked potentials to luminance- and colour-contrast in infants. *Vision Research* **36** 3141-3155.

60. Ross, J, Burr, D.C. & Morrone, M.C. (1996) Suppression of the Magnocellular Pathways during Saccades. *Behavioural Brain Research* **80** 1-8.

61. Burr, D.C., Morrone, M.C. & Fiorentini, A. (1996) Spatial and temporal properties of infant colour vision. In *EBBS workshop series: development of infant vision.* pp63-77 (Edited by F. Vital-Durant, J. Atkinson & O. Braddick). OUP, Oxford.

62. Burr, D.C., Morrone, M.C.and Ross, J. (1996) Spatial and temporal contrast sensitivity during saccades: evidence for suppression of the magnocellular visual pathway. In *John Dalton's colour vision legacy.* 147 -154 (Edited by C.M. Dickinson, I. Murray & Carden). Taylor and Francis, London.

63. Morrone, M.C. & Bedarida, L. (1996) A model of cone interaction for coding chromatic information. In *John Dalton's colour vision legacy.* 599-610 (Edited by Dickinson, Murray & Carden.). Taylor and Francis, London..

64. Ross, J., Morrone, M.C. & Burr, D.C. (1997) Compression of visual space before saccades. *Nature* **386** 598-601

65. Morrone M. C. & Burr D. C. (1997) Capture and trasparency in coarse quantized images. *Vision Research* 2609-2629.

66. Morrone M.C., Ross, J. Burr, D.C. (1997) Apparent position of Visual Targets during Real and Simulated Saccadic Eye Movements. *The Journal of Neuroscience* 1**7** (20): 7941-7953.

67. Del Viva, M.M. & Morrone, M.C. (1998) Motion Analysis by feature tracking. *Vision Research.* 38: 3633-3655..

68. Burr, D.C., Morrone, M.C., & Vaina, L. (1998) Large receptive fields for optic flow direction in humans *Vision Research.* 38: 1731-1743.

69. Burr, D. C., A. Fiorentini & Morrone, M. C. (1998). Reaction time to motion onset of luminance and chromatic gratings is determined by perceived speed. *Vision Research* **38**: 3681-3690.

70. Neri, P., M. C. Morrone and D.C. Burr (1998). Seeing Biological motion. *Nature* **394**: 894-896.

71. Porciatti, V., Fiorentini, A., Morrone, M.C. & Burr, D.C. (1999) The effects of ageing on reaction times to motion onset. *Vision Research* **39**: 2157-2164.

72. Morrone M C, Atkinson J, Cioni G, Braddick O J, Fiorentini A, 1999 "Development changes in optokinetic mechanisms in the absence of unilateral cortical control." *Neuroreport* **10**, 1-7, 1999.

73. Morrone M C, Burr D C, Di Pietro S, Stefanelli M A, "Cardinal directions for visual optic flow" *Current Biology* **9**: 763-766, 1999.

74. Burr, D. C., M. J. Morgan & Morrone, M.C. (1999). Saccadic suppression precedes visual motion analysis. *Current Biology* 9: 1207-1209

75. Diamond M R, Ross J, Morrone M C (2000) "Extraretinal Control of saccadic Suppression" *J. Neurosci.* **20**:3442 - 3448.

76. Morrone, Mc, Tosetti, M, Montanaro, D. Fiorentini A. Cioni, G. & Burr D C (2000) "A cortical area that responds specifically to optic flow, revealed by fMRI. *Nature Neuroscience,* **3**: 1221-1228.

77. Ross, J. Morrone M C, Goldberg M E, Burr D C (2001) "Changes in visual perception at the time of saccades." *Trends in Neuroscience, **24**,* 113-121.

78. John Ross, M. Concetta Morrone, Michael E. Goldberg and David C. Burr (2001) 'Saccadic suppression' – no need for an active extra-retinal mechanism. *Trends in Neurosciences,* 2001,**24**:*6*:317-318.

79. Di Russo F, Spinelli D & Morrone M C (2001) Automatic gain control contrast mechanisms are modulated by attention in human: evidence from visual evoked potentials. *Vision Research* 2435-2447.

80. Fahle M., Biester A, Morrone M C. (2001) Spatiotemporal interpolation and quality of apparent motion. *J Opt Soc Am A Opt Image Sci Vis.* 2001;18(11):2668-78.

81. Burr DC, Morrone MC, Ross J. **(**2001) Separate visual representations for perception and action revealed by saccadic eye movements. *Curr Biol.* May 15;11(10):798-802.

82. Morrone, M.C., Denti, V., & Spinelli, D. (2002). Color and luminance contrasts attract independent attention. *Curr Biol, 12* (13), 1134-1137.

83. Santoro, L., Burr, D., & Morrone, M.C. (2002). Saccadic compression can improve detection of Glass patterns. *Vision Res, 42* (11), 1361-1366.

84. Scognamillo, R., Rhodes, G., Morrone, C., & Burr, D. (2003). A feature-based model of symmetry detection. *Proc R Soc Lond B Biol Sci, 270* (1525), 1727-1733

85. Melcher, D., & Morrone, M.C. (2003). Spatiotopic temporal integration of visual motion across saccadic eye movements. *Nat Neurosci, 6* (8), 877-881

86. Melcher, D, Crespi, S, Bruno, A & Morrone, MC (2004) The role of attention in central and peripheral motion integration. *Vision Res, 44* (12), 1367-1374.

87. Morrone, M C, Denti, V & Spinelli, D. (2004) Different attentional resources modulate the gain mechanisms for color and luminance contrast. *Vision Res, 44* (12), 1389-1401.

88. Burr, D., & Morrone, M.C. (2004). Visual perception during saccades. In: L. Chalupa, & J. Werner (Eds.), *The visual neurosciences* (pp. 1391-1401). Boston: MIT Press.

89. Awater, H., Burr, D., Lappe, M., Morrone, M.C., & Goldberg, M.E. (2005). The effect of saccadic adaptation on the localization of visual targets. *J Neurophysiol,* **93**, 3605–3614.

90. Morrone, C., Ross, J., & Burr, D. (2005). Saccades cause compression of time as well as space. *Nat Neurosci,* 8:950-954.

91. Perna A, Tosetti M, Montanaro D and Morrone M C (2005) Neuronal mechanisms for brightness perception in humans. *Neuron.* 47:645-651.

92. Burr, D., & Morrone, M.C. (2005). Eye movements: building a stable world from glance to glance. *Curr Biol,* **15** (20), R839-840.

93. Morrone, M.C., Ma-Wyatt, A., & Ross, J. (2005). Seeing and ballistic pointing at perisaccadic targets. *J Vis,* **5** (9), 741-754.

94. Rhodes, G., Peters, M., Lee, K., Morrone, M.C., & Burr, D. (2005). Higher-level mechanisms detect facial symmetry. *Proc Royal Soc Lond B Biol Sci,* **272** (1570), 1379-1384.

95. Burr, D., McKee, S., & Morrone, C.M. (2006). Resolution for spatial segregation and spatial localization by motion signals. *Vision Res,* **46** (6-7), 932-939.

96. Burr, D., & Morrone, C. (2006). Time perception: space-time in the brain. *Curr Biol,* **16** (5), R171-173.

97. Del Viva, M. M., & Morrone, M. C. (2006). A feature-tracking model simulates the motion direction bias induced by phase congruency. *Journal of Vision, 6*(3), 179-195, http://journalofvision.org/6/3/1/, doi:10.1167/6.3.1.

98. Alais, D., Morrone, C., & Burr, D. (2006). Separate attentional resources for vision and audition. *Proc. R. Soc. Lond. B, 273*, 1339-1345.

99. Burr, D., & Morrone, C. (2006). Perception: transient disruptions to neural space-time. *Curr Biol, 16*(19), R847-849.

100. Bruno, A., Brambati, S. M., Perani, D., & Morrone, M. C. (2006). Development of saccadic suppression in children. *J Neurophysiol, 96*(3), 1011-1017.

101. Morrone, M.C., Ross, J., & Burr, D.C. (2007). Keeping vision stable: rapid updating of spatiotopic receptive fields may cause relativistic-like effects. In: R. Nijhawan (Ed.) *Problems of Space and Time in Perception and Action* (Cambridge: CUP).

102. Perna, A., & Morrone, M.C. (2007). The lowest spatial frequency channel determines brightness perception. *Vision Res, 47* (10), 1282-1291.

103. Tozzi, A., Morrone, M.C., & Burr, D.C. (2007). The effect of optokinetic nystagmus on the perceived position of briefly flashed targets. *Vision Res, 47* (6), 861-868.

104. Chirimuuta, M., Burr, D., & Morrone, M.C. (2007). The role of perceptual learning on modality-specific visual attentional effects. *Vision Res, 47* (1), 60-70.

105. Melcher, D and Morrone, M C (2007) Transsaccadic memory: Building a stable world from glance to glance. In R.P.G. van Gompel, R.P.G., M.H. Fischer, W.S. Murray, &

R.L. Hill (Eds.). *Eye-movements: A window on mind and brain.* Oxford: Elsevier. 213-236.

106. Burr, D., Tozzi, A., & Morrone, M.C. (2007). Neural mechanisms for timing visual events are spatially selective in real-world coordinates. *Nat Neurosci, 10* (4), 423-425.
107. d'Avossa, G., Tosetti, M., Crespi, S., Biagi, L., Burr, D.C., & Morrone, M.C. (2007). Spatiotopic selectivity of BOLD responses to visual motion in human area MT. *Nat Neurosci, 10* (2), 249-255.
108. Binda, P., Bruno,A., Burr, D.C., and Morrone, M.C. (2007) Fusion of Visual and Auditory Stimuli during Saccades: A Bayesian Explanation for Perisaccadic Distortions. *Journal of Neuroscience. 27(32),* 8525-32.
109. Bruno, A and Morrone, MC (2007) Influence of saccadic adaptation on spatial localization: comparison of verbal and pointing reports. *J of Vision* 5(9):7, 741-754, http://journalofvision.org/5/9/7/, doi:10.1167/5.9.7
110. Morrone, MC, Gazzetta, A, Tinelli, F, Tosetti, M, Del Viva, M, Montanaro, D, Burr, D and Cioni, C (2008) Inversion of Perceived Direction of Motion Caused by Spatial Undersampling in Two Children with Periventricular Leukomalacia. *Journal of Cognitive Neuroscience*. 20(6):1094-106
111. Perna, A, Tosetti, M, Montanaro, D and Morrone, MC (2008) BOLD response to spatial phase congruency in human brain. *J of Vision*, 2008 Dec 22;8(10):15.1-15
112. Morrone, MC and Burr, DC (2009) Visual stability during saccadic eye movements *The Cognitive Neurosciences, 3rd Edition,* Gazzaniga *et al.*, editors. MIT Press(Cambridge)
113. Cicchini, GM and Morrone, MC (2008) Shifts in spatial aattention affect the perceived duration of events. *J of Vision* 9(1), Article 9, Pages 1-13 http://journalofvision.org/9/1/9/. PubMed PMID: 19271879
114. Burr, D, Baldassi, S, Morrone, MC , Verghese, P. Pooling and Segmenting Motion Signals. *Vision Research*, 2008 Dec 15. [Epub ahead of print]
115. Burr, D, Silva, O, Cicchini, GM, Banks, MS and Morrone, MC (2009) Temporal mechanisms of multimodal binding Proc. R. Soc. B *276:1761-1769;* . PubMed PMID: 19324779; PubMed Central PMCID: PMC2674495
116. Binda P, Cicchini GM, Burr DC, Morrone MC. Spatiotemporal distortions of visual perception at the time of saccades. J Neurosci. 2009 Oct 21;29(42):13147-57. PubMed PMID: 19846702.
117. Burr D, Banks MS, Morrone MC. Auditory dominance over vision in the perception of interval duration. Exp Brain Res. 2009 Sep;198(1):49-57. Epub 2009 Jul 14.PubMed PMID: 19597804
118. A. Puiatti, P. Binda, M. Cicchini, S. Giordano and M. C. Morrone, "A Wireless Sensor Networks Platform for Modelling Space Perception During Saccadic Eye-Movements", IMEKO TC1-TC7 **Events Series** - proceedings http://www.imeko.org/publications/tc1-tc7-2008/IMEKO-TC1-TC7-2008-019.pdf
119. Binda, P., Morrone, M. C., & Burr, D. C. (2010). Temporal auditory capture does not affect the time course of saccadic mislocalization of visual stimuli. *Journal of Vision, 10*(2):7, 1-13, http://journalofvision.org/10/2/7/, doi:10.1167/10.2.7.

120. Lunghi**, C,** Binda, P and Morrone, MC (2010)Touch disambiguates rivalrous perception at early stages of visual analysis. *Current Biology***,**10(4), R143-R144, 23 Feb 2010.

121. Morrone, M C and Burr, D C (2010) Space-Time in the brain. in *Attention and Time*. Nobre & Coull, editors. Oxford University Press pages:177-186.

122. Morrone MC, Cicchini M, Burr DC. (2010) Spatial maps for time and motion, *Experimental Brain Research*, pp 350, tot.pag 8

123. Burr DC, Morrone MC. (2010) Vision: keeping the world still when the eyes move. *Current Biology*, vol. 2010 May 25; 20(10):R442-4.

124. Binda P, Morrone MC, Ross J, Burr DC. (2010) Underestimation of perceived number at the time of saccades, *Vision Research* online 8 October 2010, ISSN 0042-6989, DOI: 10.1016/j.visres.2010.09.028.

125. Schutz A, Morrone MC. (2010) Compression of time during smooth pursuit eye movements, *Vision Research*, In Press, Corrected Proof, Available online 4 August 2010, ISSN 0042-6989, DOI: 10.1016/j.visres.2010.07.022.

126. Morrone MC. (2010) Brain Development: Critical Periods for Cross-Sensory Plasticity. *Current Biology* 20(19): 1797

127. Burr DC, Ross J, Binda P, Morrone MC. (2010). Saccades compress space, time and number. *Trends in Cognitive Sciences* Dec;14(12):528-33. Epub

128. Campanella F, Sandini G, Morrone MC. (2011) Visual information gleaned by observing grasping movement in allocentric and egocentric perspectives. Proc Biol Sci. Jul 22;278(1715):2142-9.

129. Burr DC, Morrone MC. (2011) Spatiotopic coding and remapping in humans. *Phil. Trans. Roy. Soc.*, 2011 Feb 27;366(1564):504-15. Review.

130. Burr DC, Cicchini GM, Arrighi R, Morrone MC. Spatiotopic selectivity of adaptation-based compression of event duration. *J Vis.* 2011 Feb 25;11(2):21; author reply 21a. doi: 10.1167/11.2.21.

131. Zimmermann E, Burr D, Morrone MC. Spatiotopic visual maps revealed by saccadicadaptation in humans. *Curr Biol*. 2011 Aug 23;21(16):1380-4. Epub 2011 Jul 28.

132. Lunghi C, Burr DC, Morrone C. Brief periods of monocular deprivation disrupt ocular balance in human adult visual cortex. *Curr Biol*. 2011 Jul 26;21(14):R538-9.

133. Shevell S, Hood D, Martin P, Morrone C, Levi D. 50th anniversary special issue of Vision Research--volume 2. *Vision Res.* 2011 Jul 1;51(13):1377-8.

134. Tomassini A, Gori M, Burr D, Sandini G, Morrone MC. Perceived duration of Visual and Tactile Stimuli Depends on Perceived Speed. *Front Integr Neurosci.* 2011;5:51. Epub 2011 Sep 12.

135. Harris L, Morrone MC. Seeing and Perceiving is announcing the change of the North American editor, introduction. *Seeing Perceiving.* 2011;24(3):201.

136. Crespi S, Biagi L, d'Avossa G, Burr DC, Tosetti M, Morrone MC. Spatiotopic coding of BOLD signal in human visual cortex depends on spatial attention. *PLoS One.* 2011;6(7):e21661. Epub 2011 Jul 7.

137. Knöll J, Binda P, Morrone MC, Bremmer F. (2011) Spatiotemporal profile of peri-saccadic contrast sensitivity. *J Vis.* Dec 16;11(14).

138. Morrone, M C and Burr, D C (2011) Neural Plasticity in Humans: Development of Cross-Orientation Contrast Normalization and Cross-Sensory Calibration. In Cerebral Plasticity. Editors Chaluppa et al. MIT press. 165-178

139. Pooresmaeili, A., Cicchini, G. M., Morrone, M. C. & Burr, D. (2012). "Non-retinotopic processing" in Ternus motion displays modeled by spatiotemporal filters,*J Vis* Jan 13;12(1). pii: 10. doi: 10.1167/12.1.10.

140. Zimmermann, E., Morrone, M. C. & Burr, D. (2012). Visual motion distorts visual and motor space, *J Vis*. 2012 Feb 10;12(2). pii: 10. doi: 10.1167/12.2.10.

141. Panicchi, M, Morrone, M C, Burr, D C & Baldassi, S (2012) Spatiotemporal dynamics of peri-saccadic remapping in humans revealed by classification images. *J Vis*. 2012 Apr 18;12(4). pii: 11. doi: 10.1167/12.4.11

142. A Tomassini, M Gori, DC Burr, G Sandini, MC Morrone (2012) Active movement restores veridical event-timing after tactile adaptation. *J. Neurophysiology*. Published online before print July 25, 2012, doi: 10.1152/jn.00238.2012

143. Binda P, Morrone MC, Bremmer F. Saccadic compression of symbolic numerical magnitude. PLoS One. 2012;7(11):e49587. do10.1371/journal.pone.0049587. Epub 2012 Nov 15.

144. Morrone MC. Plasticità ed adattabilità della visione. Giornale Italiano di Psicologia 2012. Vol 3 pp. 517-522, DOI: 10.1421/38765

145. F Tinelli, GM Cicchini, R Arrighi, M Tosetti, G Cioni, MC Morrone (2013) Blindsight in children with congenital and acquired cerebral lesions *Cortex* Jun;49(6):1636-47. doi: 10.1016/j.cortex.2012.07.005. Epub 2012 Aug 10.

146. Cicchini GM, Binda P, Burr DC, Morrone MC. (2013) Transient spatiotopic integration across saccadic eye movements mediates visual stability. J Neurophysiol. Feb;109(4):1117-25 doi: 10.1152/jn.00478.2012. Epub 2012 Nov 28.

147. Knöll J, Morrone MC, Bremmer F. (2013) Spatio-temporal topography of saccadi overestimation of time. Vision Res. May 3;83:56-65. doi:10.1016/j.visres.2013.02.013. Epub 2013 Feb 28.

148. Zimmermann E, Morrone MC, Fink GR, Burr D. (2013) Spatiotopic neural representations develop slowly across saccades. Curr Biol. Mar 4;23(5):R193-4. doi: 10.1016/j.cub.2013.01.065.

149. Castaldi E, Frijia F, Montanaro D, Tosetti M, Morrone MC. (2013) BOLD human responses to chromatic spatial features. Eur J Neurosci. Jul;38(2):2290-9. doi:10.1111/ejn.12223. Epub 2013 Apr 19.

150. Lunghi C, Burr DC, Morrone MC. (2013) Long-term effects of monocular deprivation revealed with binocular rivalry gratings modulated in luminance and in color. J Vis. May 1;13(6). doi:pii: 1. 10.1167/13.6.1.

151. Harris L, Morrone MC. Editorial on the launch of Multisensory Research. A journal of scientific research on all aspects of multisensory processing. (2013) Multisens Res.;26(1-2):1-2. PubMed PMID: 23713196.

152. Pooresmaeili, A., Cicchini, G.M., Morrone, M. C. & Burr, D.C. (2013). Spatiotemporal filtering and motion illusions, Journal of Vision, (13)10-21

153. Burr, D., Rocca, E. D. & Morrone, M. C. (2013). Contextual effects in interval-duration judgements in vision, audition and touch.,Exp Brain Res. 230:87–98

154. Lunghi, C. & Morrone, M. C. (2013). Early interaction between vision and touch during binocular rivalry,Multisens Res, 3 (26), 291-306.

155. Zimmerman, E., Morrone,M.C. & Burr, DC.. (2013).Spatial position information accumulates steadily over time, J Neurosci 33(47):18396-401

156. Pooresmaeili, A., Arrighi, R., Biagi, L. & Morrone, M. C. (2013). Blood oxygen level-dependent activation of the primary visual cortex predicts size adaptation illusion,J Neurosci, 40 (33), 15999-16008.

157. Sani I, Santandrea E, Golzar A, Morrone MC, Chelazzi L. Selective tuning for contrast in macaque area V4.. J Neurosci. 2013 Nov 20;33(47):18583-96

158. Orchard-Mills E, Leung J, Burr D, Morrone MC, Wufong E, Carlile S, Alais D. A mechanism for detecting coincidence of auditory and visual spatial signals. Multisens Res. 2013;26(4):333-45.

159. Gori M, Sciutti A, Jacono M, Sandini G, Morrone C, Burr DC. (2013) Long integration time for accelerating and decelerating visual, tactile and visuo-tactile stimuli. Multisens Res. 26(1-2):53-68.

160. Lunghi, C., Morrone, M. C. & Alais, D. (2014). Auditory and tactile signals combine to influence vision during binocular rivalry, J Neurosci., 34(3):784-92.

161. Morrone, M C (2014) Interaction between Eye Movements and Vision: Perception during Saccades In J. S. Werner & L. M. Chalupa (Eds.), The New Visual Neuroscience: MIT Press, 2nd edition. Pag 947 -962.

162. Tomassini A, Gori M, Baud-Bovy G, Sandini G, Morrone MC (2014). Motor commands induce time compression for tactile stimuli. J Neurosci. Jul 2;34(27):9164-72.

163. Zimmermann E, Morrone MC, Burr DC. The visual component to saccadic compression. J Vis. 2014 Oct 13;14(12).

164. Zimmermann E, Morrone MC, Burr DC.(2014) Buildup of spatial information over time and across eye-movements. Behav Brain Res. 2014 Dec 15;275:281-7.

165. Zimmermann E, Morrone MC, Burr D. (2015) Visual mislocalization during saccade sequences. Exp Brain Res. Feb;233(2):577-85.

166. Tinelli, F., Anobile, G., Gori, M., Aagten-Murphy, D., Bartoli, M., Burr, D. C., Cioni, G., Morrone, M.C. (2015) Time, number and attention in very low birth weight children, Neuropsychologia, Volume 73, July 2015, Pages 60-69.

167. Lunghi C, Berchicci M, Morrone MC, Russo FD. (2015) Short-term monocular deprivation alters early components of Visual Evoked Potentials. J Physiol. Jun 26. doi:10.1113/JP270950.

168. Cicchini GM, Marino C, Mascheretti S, Perani D, Morrone MC. (2015) Strong Motion Deficits in Dyslexia Associated with DCDC2 Gene Alteration. J Neurosci. May 27;35(21):8059-64.

169. Greco V, Frijia F, Mikellidou K, Montanaro D, Farini A, D'Uva M, Poggi P,Pucci M, Sordini A, Morrone MC, Burr DC. (2015) A low-cost and versatile system for projecting wide-field visual stimuli within fMRI scanners. Behav Res Methods. Jun 20.

170. Lunghi C, Emir UE, Morrone MC, Bridge H. (2015) Short-Term Monocular Deprivation Alters GABA in the Adult Human Visual Cortex. Curr Biol. 2015 Ju 1;25(11):1496-501.

171. Tomassini A, Spinelli D, Jacono M, Sandini G, Morrone MC. (2015) Rhythmic oscillations of visual contrast sensitivity synchronized with action. J Neurosci. May 6;35(18):7019-29.

172. Melcher, D., Morrone, M.C. (2015) Nonretinotopic visual processing in the brain. Visual Neuroscience Jan;32

173. Biagi L, Crespi SA, Tosetti M, Morrone MC (2015) BOLD Response Selective to Flow-Motion in Very Young Infants. PLoS Biol. 2015 Sep 29;13(9)

174. Tamietto M, Morrone MC. (2016) Visual Plasticity: Blindsight Bridges Anatomy and Function in the Visual System. Curr Biol. Jan 25;26(2):R70-3.

175. Zimmermann E, Morrone MC, Burr D. Adaptation to size affects saccades with long but not short latencies. J Vis. 2016 May 1;16(7):2. doi: 10.1167/16.7.2.

176. Lunghi C, Morrone MC, Secci J, Caputo R. Binocular Rivalry Measured 2 Hours After Occlusion Therapy Predicts the Recovery Rate of the Amblyopic Eye in Anisometropic Children. Invest Ophthalmol Vis Sci. 2016 Apr 1;57(4):1537-46. doi:10.1167/iovs.15-18419.

177. Castaldi E, Aagten-Murphy D, Tosetti M, Burr D, Morrone MC. Effects of adaptation on numerosity decoding in the human brain. Neuroimage. 2016 Sep 10;143:364-377. doi: 10.1016/j.neuroimage.2016.09.020.

178. Tomassini A, Morrone MC. Perceived visual time depends on motor preparation and direction of hand movements. Sci Rep. 2016 Jun 10;6:27947. Doi 10.1038/srep27947.

179. Benedetto A, Spinelli D, Morrone MC. Rhythmic modulation of visual contrast discrimination triggered by action. Proc Biol Sci. 2016 May 25;283(1831). pii:20160692. doi: 10.1098/rspb.2016.0692.

180. Castaldi E, Cicchini GM, Cinelli L, Biagi L, Rizzo S, Morrone MC. Visual BOLD Response in Late Blind Subjects with Argus II Retinal Prosthesis. PLoS Biol. 2016 Oct 25;14(10):e1002569. doi: 10.1371/journal.pbio.1002569.

181. Lo Verde L, Morrone MC, Lunghi C. (2016) Early Cross-modal Plasticity in Adults. J Cogn Neurosci. Mar;29(3):520-529. doi: 10.1162/jocn_a_01067

182. Tinelli F, Cioni G, Sandini G, Turi M, Morrone MC (2017) Visual information from observing grasping movement in allocentric and egocentric perspectives: development in typical children. Exp Brain Res. 2017 Mar 28

183. Benedetto A, Morrone MC (2017) Saccadic Suppression Is Embedded Within Extended Oscillatory Modulation of Sensitivity. J Neurosci. Mar 29;37(13):3661-3670.

184. Bourne JA, Morrone MC. (2017) Plasticity of Visual Pathways and Function in the Developing Brain: Is the Pulvinar a Crucial Player? Front Syst Neurosci. Feb 8;11:3.

185. Sani I, Santandrea E, Morrone MC, Chelazzi L. Temporally Evolving Gain Mechanisms of Attention in Macaque Area V4. J Neurophysiol. 2017 May: jn.00522.2016. doi: 10.1152/jn.00522.2016.