Yaffa Yeshurun November 2014

CURRICULUM VITAE

1. Personal Details

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2. Higher Education

A. Undergraduate and Graduate Studies

Period of Study	Name of Institution and Department	Degree	Year of Approval of Degree
1989-1993	Psychology Department Tel-Aviv University, Israel	B.A.	1993
1996-1998	Computer Sciences New York University, USA	M.S.	1998
1994-1999	Psychology Department New York University, USA	Ph.D.	1999

B. Post-Doctoral Studies

Not applicable

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Name of Institution and Department	Rank/Position
2000 – 2008	Department of Psychology, University of Haifa	Lecturer
2008 - present	*Department of Psychology, University of Haifa	Senior Lecturer
2011 – 2012	*Department of Psychology, University of New South Wales, Australia	Visiting Academic
2012 – 2013	*ZiF Center for Interdisciplinary Research, Bielefeld University, Germany	ZiF Fellow

4. Offices in University Academic Administration

2005 – 2011	Head of Cognitive Psychology M.A Program
2009 – 2011	*Head of Psychology B.A Program
2013 – present	*Head of Experimental Psychology Ph.D. Program Steering Committee
2014 – present	*Head of Psychology Ph.D. Program

5. Scholarly Positions and Activities outside the University

Editorial Board:

Date	Journal	Activity
2009 – present	*Attention Perception & Psychophysics	Associate Editor

Referee of Professional Journals:

Date	Journal
2001 – present	*Acta Psychologica; Attention Perception & Psychophysics; Cognition; *Experimental Psychology; Journal of Experimental Psychology: Human Perception and Performance; *Frontiers in Psychology; *Journal of Mathematical Psychology; *Neuropsychologia; *Neuroscience Letters; Perception; *PLoS ONE; Psychological Research; Psychological Science; Psychonomic Bulletin & Review; Quarterly Journal of Experimental Psychology; Spatial Vision; Journal of Vision; Vision Research; Visual Cognition

Referee of Grants Proposals:

Date	Grant
2003 – present	The Israel Science Foundation (ISF)
	United States Israel Binational Science Foundation (BSF)
	German-Israeli Foundation (GIF)
	The National Institute For Psychobiology In Israel (NIPI)
	*Review panel member: German Research Foundation (DFG)
	*Austrian Academy of Sciences

Program Reviewer:

Date	Society
2008 – present	*Vision Sciences Society

Membership in Scientific Societies:

Vision Sciences Society

*The Psychonomic Society

6. Participation in Scholarly Conferences

a. Active Participation

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
April 1996	ARVO Annual Meeting	Ft. Lauderdale, FL, USA	Effects of pre-cueing the target location on the set-size	Presenter
November 1996	Psychonomic	Chicago, IL, USA	Re-evaluating the role of covert attention in visual search	Co-Author
May 1997	ARVO Annual Meeting	Ft. Lauderdale, FL, USA	The effects of cueing spatial attention on discrimination tasks	Presenter
November 1997	Psychonomic	Philadelphia, PA, USA	Spatial attention improves observers' discrimination	Co-Author
May 1998	ARVO Annual Meeting	Ft. Lauderdale, FL, USA	The effects of cueing attention on an orientation texture segregation task	Presenter
August 1998	European Conference on Visual Perception	Oxford, UK	1. Do attentional effects differ across visual fields?	Co-Author
			2. Spatial attention affects acuity and texture segregation	Presenter
September 1998	European Society for Cognitive Psychology	Jerusalem, Israel	The effects of cueing spatial attention on acuity and texture segregation tasks	Presenter
November 1998	Psychonomic	Dallas, TX, USA	Attention improves and impairs visual performance by enhancing spatial resolution	Co-Author

May 1999	ARVO Annual Meeting	Ft. Lauderdale, FL, USA	Attentional effects in texture segmentation as a function of the texture's spatial frequency	Presenter
November 1999	Psychonomic	Los Angeles, CA, USA	The locus of the attentional effects in texture segregation	Co-Author
May 2001	Vision Science Society (VSS)	Sarasota, FL, USA	The effects of spatial attention on temporal resolution	Presenter
August 2001	European Conference on Visual Perception	Kussadasi, Turkey	The effects of spatial attention on temporal resolution	Presenter
May 2002	Vision Science Society (VSS)	Sarasota, FL, USA	Spatial attention and visual temporal processes	Presenter
May 2003	Vision Science Society (VSS)	Sarasota, FL, USA	Apparent motion is less apparent with attention	Presenter
May 2004	Vision Science Society (VSS)	Sarasota, FL, USA	Transient attention and the integration of information across time	Presenter
October 2004	The Israeli Society for Cognitive Psychology	Ramat Gan, Israel	Differential effects of the transient and sustained components of spatial attention	Presenter
May 2005	Vision Science Society (VSS)	Sarasota, FL, USA	1. Motion perception is differentially effected by the transient and sustained components of spatial attention	Presenter
			2. On the flexibility of covert attention and its effects on a texture segmentation task	Co-Author
January 2006	Brain & Cognition Workshop	Taipei, Taiwan	The effects of transient attention on segregation and integration of spatial and temporal information	Presenter
May 2006	Vision Science Society (VSS)	Sarasota, FL, USA	Transient attention and selective adaptation to high and low spatial frequencies	Presenter
May 2007	Vision Science Society (VSS)	Sarasota, FL, USA	1. Evaluating the Ability of Visual Search Models Suggested for Computer-Vision to Predict Human Performance	Presenter

			2. Differential effects of endogenous and exogenous covert attention on texture segmentation	Co-Author
May 2008	Vision Science Society (VSS)	Naples, FL, USA	Perceptual objects capture attention	Presenter
*May 2009	Vision Science Society (VSS)	Naples, FL, USA	1. Differential effects of transient attention on adaptation to different spatial frequencies	Presenter
			2. The effects of transient attention and target contrast on crowding at different eccentricities	Co-Author
*August 2009	European Conference on Visual Perception	Regensburg, Germany	Modeling neurophysiological and psychophysical effects of attention via dynamic modulation of receptive fields	Presenter
*April 2010	Selection and Control Mechanisms in Perception and Action	Jerusalem, Israel	1. Transient attention and the interplay between the temporal and spatial domains of perception	Presenter
			2. Do object-based effects merely reduce spatial costs?	Co-Author
			3. The Attentional Attraction Field: Modeling spatial and temporal effects of spatial attention	Co-Author
			4. Perceptual load in central and peripheral regions and its effects on performance	Co-Author
*May 2010	Vision Science Society (VSS)	Naples, FL, USA	1. Temporal crowding with normal observers and its interplay with spatial crowding	Presenter
			2. The Attentional Attraction Field: Modeling spatial and temporal effects of spatial attention	Co-Author

*July 2010	Asia-Pacific Conference on Vision (APCV)	Taipei, Taiwan	Transient attention and perceptual tradeoffs	Presenter
*May 2011	Vision Science Society (VSS)	Naples, FL, USA	Modeling Combined Proximity-Similarity Effects in Visual Search	Co-Author
*April 2012	Australian Experimental Psychology Conference	Sydney, Australia	Stimulus-driven attentional capture by objecthood	Presenter
*March 2013	Annual Meeting of The Israeli Society of Vision and Eye Research	Airport City, Israel	Crowding modulations by spatial attention, stimuli contrast, and object formation	Presenter
*May 2013	Vision Science Society (VSS)	Naples, FL, USA	1. Differential effects of transient attention on inferred parvocellular and magnocellular processing	Presenter
			2. The Attentional Attraction Field: A feed-forward model of attention	Co-Author
			3. Competition between grouping principles	Co-Author
*February 2014	1st Israel Cognitive Psychology meeting (ISCoP)	Akko, Israel	1. Attentional attraction of receptive fields can explain spatial and temporal effects of attention	Co-Author
			2. Spatial and temporal crowding with normal observers	Co-Author
			3. Effects of stimuli contrast and pre- cueing attention in crowding	Co-Author
			4. The efficiency of attentional selectivity and perceptual load	Co-Author
*May 2014	Vision Science Society (VSS)	St. Pete Beach, FL, USA	1. Pure irrelevance induced ‘blindness’	Presenter

			2. Spatial and temporal crowding with normal observers	Co-Author
			3. Can a competition between grouping principles be resolved without attention?	Co-Author

b. <u>Organization of Conferences or Sessions</u>

Date	**Name of Conference**	**Place of Conference**	**Subject of Conference**	**Role**
2004	General Meeting of The Israeli Society for Cognitive Psychology	Bar Ilan	Cognitive psychology	Conference organizer
*2010	Selection and Control Mechanisms in Perception and Action	The Israel Institute for Advanced Studies, Jerusalem	Attention and control mechanisms	Conference organizer
*2010	Asia-Pacific Conference on Vision (APCV)	Taipei, Taiwan	Transient attention and perceptual tradeoffs	Symposium organizer

7. <u>Invited Lectures</u>

Date	**Place of Lecture**	**Name of Forum**	**Presentation/Comments**
June 2003	San Miniato, Italy	International Workshop on Visual Attention	Transient spatial attention and visual temporal processes
July 2005	University of Haifa, Israel	The Minerva Workshop Series	The effects of transient spatial attention on visual temporal processes
January 2006	Taipei, Taiwan	Brain & Cognition Workshop	The effects of transient attention on segregation and integration of spatial and temporal information
March 2007	Buenos Aires, Argentina	2nd International Workshop on Visual Attention	Stimulus-driven attentional capture by objecthood
*April 2010	Jerusalem, Israel	Selection and Control Mechanisms in Perception and Action	Transient attention and the interplay between the temporal and spatial domains of perception

*July 2010	Taipei, Taiwan	Asia-Pacific Conference on Vision (APCV)	Transient attention and perceptual tradeoffs
*June 2011	Bielefeld University, Germany	CITEC Colloquium	Transient attention and the interplay between the temporal and spatial domains of perception
*October 2011	Allahabad, India	3rd International Workshop on Visual Attention	Transient attention and perceptual tradeoffs
*July 2013	Bielefeld University, Germany	CITEC Vision Science Colloquium	Differential effects of transient attention on inferred parvocellular and magnocellular processing
*January 2014	École polytechnique fédérale (EPFL), Lausanne, Switzerland	Vision and Cognition (V&C) seminar	Transient attention and perceptual tradeoffs
*March 2014	ZiF - Center for Interdisciplinary Research, Bielefeld, Germany	Competitive visual processing across space and time: Interactions with memory	The fate of irrelevant stimulation

8. **Colloquium Talks**

Date	**Place of Lecture**	**Name of Forum**	**Presentation/Comments**
April, 1998	New York University, NY, USA	Perception and Cognition Minisymposium	Attention Enhances Spatial Resolution
March, 1999	Ben-Gurion University	Behavioral sciences colloquium	The Nature of the Attentional Mechanisms: Support for Enhanced Resolution
March, 1999	Tel Aviv University	Cognitive psychology colloquium	The Nature of the Attentional Mechanisms: Support for Enhanced Resolution
March, 1999	Hebrew University	Cognitive psychology colloquium	The Nature of the Attentional Mechanisms: Support for Enhanced Resolution
March, 1999	Technion	Behavioral sciences colloquium	The Nature of the Attentional Mechanisms: Support for Enhanced Resolution
March, 2001	Technion	Brain and Behavior Seminar	The Nature of the Attentional Mechanisms: Spatial Resolution Enhancement

April 2003	Weizmann Institute	The department of neurobiology colloquium	Spatial attention and visual temporal processes
October 2003	Tel Aviv University	Cognitive psychology colloquium	The effects of transient spatial attention on visual temporal processes
May 2004	Hebrew University	Cognitive psychology colloquium	The effects of transient attention on spatial and temporal processes
April, 2007	Ben-Gurion University		The effects of transient attention on segregation and integration of spatial and temporal information
*August 2011	Sydney University, Australia	Brain and Behavior colloquium	Transient attention and the interplay between the temporal and spatial domains of perception
*August 2011	University of New South Wales, Australia	Experimental psychology colloquium	Transient attention and the interplay between the temporal and spatial domains of perception
*November 2011	Macquarie University, Australia	Brain and Behavior colloquium	Transient attention and perceptual tradeoffs

9. **Research Grants**

a. Grants Awarded

Role	**Co-Researchers**	**Topic**	**Funded by**	**Year**
PI	None	The effects of visual spatial attention on visual temporal processes	The Israel Science Foundation –ISF	2001 – 2004 $75,000
PI	None	Binocular rivalry and the relationships between spatial attention and awareness	Israel Foundation Trustees –FORD	2001 – 2002 $6720 - Waved
PI	None	Reality Center for attention and perception lab	The Israel Science Foundation – ISF Equipment	2002 $170,000
PI	M. Carrasco PI, NYU	Are transient and sustained attention adaptable: Can they both increase and decrease spatial resolution?	United States Israel Binational Science Foundation BSF	2002 – 2005 $144,000
PI	None	Transient attention and the temporal impulse response	The Israel Science Foundation –ISF	2005–2008 $106,000

CI	R. Kimchi PI UoH	Perceptual Organization and Visual Attention: Stimulus-Driven Attentional Capture by a Perceptual Object	The Israel Science Foundation –ISF	2006–2009 $75,000
*PI	None	A systematic evaluation of in-car warning systems under varying conditions of perceptual load	The Ran Naor Foundation	2009–2010 $21,000
*PI	J. Norman PI, P. Setter, UoH T. Toledo, Technion	The effects of billboards on driving as a function of type of billboard, their size, and density	The Israel National Road Safety authority	2009-2010 $65,000
*PI	None	The effect of perceptual load on driving quality and the usability of in-car warning systems	The Research Fund on Insurance Matters	2009-2011 $42,000
*PI	None	Attention as an attraction field (AAF): The development and evaluation of a novel model of spatial attention	The National Institute for Psychobiology in Israel - NIPI	2011-2013 $100,000
*PI	J. Norman PI, P. Setter,	The influence of advertizing billboards on the attention allocation of drivers	The Research Fund on Insurance Matters	2011-2014 $120,000
*PI	None	The time course of temporal attention and its effects on basic perceptual processes	The Israel Science Foundation –ISF	2013–2017 $183,000

a. <u>Submission of Research Proposals – Pending</u>

Role	**Co-Researchers**	**Topic**	**Funded by**	**Year**
*PI	P. Setter, H. Marciano	Windshield navigation aids for older drivers: Evaluation of different designs via manipulation of perceptual load	MOST	2015-2019 $130,000

b. <u>Submission of Research Proposals – Denied</u>

None

10. <u>Scholarships, Awards and Prizes</u>

GSAS Predoctoral Summer Fellowships, New York University (Summer 1997)

Katzell Summer Fellowship (Summer 1998)

GSAS Teaching Assistant award (1994 - 1999)

Alon Fellowship (2000 –2003)

Bergmann Memorial Award – BSF (2002; $5000)

11. Teaching

a. Courses Taught in Recent Years

Year	Name of Course	Type of Course	Degree	Numbers of Students
1994-1995	Introduction to Psychology	Recitation	B.A.	40
1995-1998	Perception	Recitation	B.A.	80
1996-1999	Research Methods in Perception	Recitation	B.A.	30
2000- present	Perception	Lecture	B.A.	170
2001- present	Perception & Attention	Research Seminar	B.A.	13
2001- present	Sensation & Perception	Seminar	M.A. PhD	8
2002- present	Research Practicum	Seminar	M.A. PhD	12
*2010 - present	Attention & Performance	Seminar	M.A. PhD	8

b. Supervision of Graduate Students

Student's Name	Title of Thesis	Degree	Date
Golan Marom	The effects of spatial transient attention on duration estimation	M. A.	2003
Avshalom Erlich	Temporal integration as a tool to improve images perception	M. A.	2004
Tomer Carmel	Implicit learning demands awareness to the subjects of the underlying rule	M. A.	2007
Gilad Sabo	The effects of transient attention on pulsed vs. steady detection tasks	M. A.	2009
Einat Rashal	Attention and crowding	M. A.	2009

*Einat Rashal	Competition in the process of perceptual organization	PhD	In progress
Itay Ben Naftaly	Inattentional Blindness and 3-D perception	M. A.	In progress
Rani Bar-On	The effects of attention and spatial frequency on the perception of apparent motion	M. A.	In progress
Hadas Marciano	Perceptual Load in Different Regions of the Visual Field and its Relevance for Driving	PhD	2012
*Yamit Provisor	Competition between two attentional cues: gaze and singleton	M.A	2013
*Yamit Provisor	Representing multiple objects displays via the extraction of statistical indices	PhD	In progress
*Orly Cohen-Feldman	Mask recovery	M.A	In progress
*Ruth Peled	Figure-ground organization and the watercolor illusion	M.A	2014
*Joshua Kotler	Figure-ground organization and Inattentional Blindness	M.A	In progress
*Ilanit Hochmits	Attention and Information integration over time and space	PhD	In progress
*Tamar Hanania	Moods effects on color perception	M.A	In progress
*Shira Tkacz-Domb	Spatial attention and temporal crowding	M.A	In progress

12. **Miscellaneous**

None

PUBLICATIONS

Note: For joint publications, the order of the listed authors appears according to their relative contribution unless otherwise specified

A. Ph.D. dissertation

"How does attention aid visual perception: Support for Enhanced Resolution"

Psychology Department New York University, September 1999. Pp. 162.

Dissertation Advisor: Prof. Marisa Carrasco.

B. Scientific Books (Refereed)

None

C. Monographs

None

D. Articles in Refereed Journals

Published

1. Carrasco, M. & **Yeshurun, Y.** (1998). The contribution of covert attention to the set-size and eccentricity effects in visual search. *Journal of Experimental Psychology: Human Perception and Performance*, 24(2), 673-692.
   Citations: 140. Journal IF: 3.105; 5-yrs IF: 3.636; Rank (Exp. Psych) 16/83 Quartile - Q1
   Note: the authors have contributed equally

2. **Yeshurun, Y.** & Carrasco, M. (1998). Attention improves or impairs visual performance by enhancing spatial resolution. *Nature*, 396(6706), 72-75.
   Citations: 482. Journal IF: 42.351; 5-yrs IF: 40.783; Rank: (Multidisci. Sci.) 1/55 Quartile - Q1

3. **Yeshurun, Y.** & Carrasco, M. (1999). Spatial attention improves performance in spatial resolution tasks. *Vision Research*, 39(2), 293-305.
   Citations: 222. Journal IF: 2.381; 5-yrs IF: 2.551; Rank: (Ophth.) 18/58 Quartile - Q2

4. **Yeshurun, Y.** & Carrasco, M. (2000) The locus of attentional effects in texture segmentation. *Nature Neuroscience*, 3(6), 622-627.
   Citations: 104. Journal IF: 14.976; 5-yrs IF: 16.273; Rank: (*Neurosci*.) 6/252 Quartile - Q1

5. Carrasco M., Williams P. & **Yeshurun Y.** (2002) Covert attention increases spatial resolution with or without masks: Support for signal enhancement. *Journal of Vision*, 2(6), 467-479.
   Citations: 172. Journal IF: 2.727; 5-yrs IF: 3.075; Rank: (Ophth.) 12/58 Quartile – Q1

6. **Yeshurun, Y.** & Levy, L. (2003) Transient spatial attention degrades temporal resolution. *Psychological Science*, 14(3), 225-231.
   Citations: 91. Journal IF: 4.864; 5-yrs IF: 6.501; Rank: (Psych. Multidisci.) 10/129 Quartile – Q1

7. **Yeshurun, Y.** (2004). Isoluminant stimuli and red background attenuate the effects of transient spatial attention on temporal resolution. *Vision Research*, 44, 1375–1387.
   Citations: 57. Journal IF: 2.381; 5-yrs IF: 2.551; Rank: (Ophth.) 18/58 Quartile - Q2

8. Kimchi, R., **Yeshurun, Y.** & Cohen-Savransky, A. (2007) Automatic, Stimulus-driven Attentional Capture by Objecthood. *Psychonomic Bulletin & Review*, 14 (1), 166-172.
   Citations: 28. Journal IF: 2.986; 5-yrs IF: 3.306; Rank: (Exp. Psych.) 18/83 Quartile – Q1

9. **Yeshurun, Y.** & Carrasco, M. (2008). The effects of transient attention on spatial resolution and the size of the attentional cue. *Perception & Psychophysics*, 70(1), 104-113.
   Citations: 30. Journal IF: 2.152; 5-yrs IF: 2.448; Rank: (Exp. Psych.) 32/83 Quartile - Q2

10. **Yeshurun, Y.**, Montagna, B. & Carrasco, M. (2008). On the flexibility of sustained attention and its effects on a texture segmentation task. *Vision Research*, 48(1), 80-95.
    Citations: 53. Journal IF: 2.381; 5-yrs IF: 2.551; Rank: (Ophth.) 18/58 Quartile - Q2

11. Avraham, T., **Yeshurun, Y.** & Lindenbaum, M. (2008). Predicting Visual-Search Performance by Quantifying Stimuli Similarities. *Journal of Vision*, 8(4):9, 1–22.
    Citations: 7. Journal IF: 2.727; 5-yrs IF: 3.075; Rank: (Ophth.) 12/58 Quartile – Q1

12. **Yeshurun, Y.** & Marom, G. (2008). Transient spatial attention and the perceived duration of brief visual events. *Visual Cognition, 16(6),* 826-848.
    Citations: 17. Journal IF: 1.651; 5-yrs IF: 1.940; Rank: (Exp. Psych.) 47/83 Quartile – Q3

13. **Yeshurun, Y.,** Carrasco, M. & Maloney, L. T. (2008). Bias and sensitivity in two-interval forced choice procedures. *Vision Research, 48,* 1837-1851.
    Citations: 63. Journal IF: 2.381; 5-yrs IF: 2.551; Rank: (Ophth.) 18/58 Quartile - Q2
    Note: the authors have contributed equally

14. **Yeshurun, Y.**, Kimchi, R., Sha'shoua, G., & Carmel, T. (2009). Perceptual objects capture attention. *Vision Research, 49,* 1329–1335.
    Citations: 17. Journal IF: 2.381; 5-yrs IF: 2.551; Rank: (Ophth.) 18/58 Quartile - Q2

15. ***Yeshurun, Y.** & Rashal, E. (2010). Precueing attention to the target location diminishes crowding and reduces the critical distance. *Journal of Vision,* 10(10):16, 1–12.
    Citations: 47. Journal IF: 2.727; 5-yrs IF: 3.075; Rank: (Ophth.) 12/58 Quartile – Q1

16. *Marciano, H. & **Yeshurun, Y.** (2011). The Effects of Perceptual Load in Central and Peripheral Regions of the Visual Field. *Visual Cognition*, 19(3), 367 – 391.
    Citations: 14. Journal IF: 1.651; 5-yrs IF: 1.940; Rank: (Exp. Psych.) 47/83 Quartile – Q3
    Note: the authors have contributed equally

17. ***Yeshurun, Y.** & Hein, E. (2011). Transient attention degrades perceived apparent motion. *Perception*, 40, 905 – 918.

Citations: 3. Journal IF: 1.114; 5-yrs IF: 1.446; Rank (Psych.) 57/74 Quartile – Q4

18. *Marciano, H. & **Yeshurun, Y.** (2012). Perceptual load in central and peripheral regions and its effects on driving performance: Advertizing billboards. *Work: A Journal of Prevention, Assessment and Rehabilitation,* 41, 3181-3188.
Citations: 3. Journal IF: 0.169; 5-yrs IF: 0.357; Rank: (Health) 125/139 Quartile – Q4

19. ***Yeshurun, Y.** & Sabo, G. (2012). Differential effects of transient attention on inferred Parvocellular and Magnocellular processing. *Vision Research,* 74, 21-29.
Citations: 5. Journal IF: 2.381; 5-yrs IF: 2.551; Rank: (Ophth.) 18/58 Quartile - Q2

20. ***Yeshurun, Y.** & Marciano, H. (2013). Degraded stimulus visibility and the effects of perceptual load on distractor interference. *Frontiers in Psychology,* 4:289. doi: 10.3389/fpsyg.2013.00289
Citations: 3. Journal IF: 2.843; 5-yrs IF: 2.869; Rank: (Psych. Multidisci.) 20/129 Quartile – Q1
Note: the authors have contributed equally

21. *Baruch, O., **Yeshurun, Y.**, shore, D. (2013). Space and time: An impact of spatial separation, apparent motion, and perceptual grouping on TOJ performance. *Perception*, 42(5), 551-561.
Citations: 1. Journal IF: 1.114; 5-yrs IF: 1.446; Rank (Psych.) 57/74 Quartile – Q4
Note: the authors have contributed equally

22. *Eitam, B., **Yeshurun, Y.** & Hassan, K. (2013). Blinded by Irrelevance: Pure Irrelevance Induced 'Blindness'. *Journal of Experimental Psychology: Human Perception and Performance*, 39(3), 611-615.
Citations: 5. Journal IF: 3.105; 5-yrs IF: 3.636; Rank (Exp. Psych) 16/83 Quartile - Q1

23. *Baruch, O. & Yeshurun, Y. (2014). Attentional attraction of receptive fields can explain spatial and temporal effects of attention. *Visual Cognition*, 22(5), 704-736.
Journal IF: 1.651; 5-yrs IF: 1.940; Rank: (Exp. Psych.) 47/83 Quartile – Q3

<u>Accepted for Publication</u>

24. *Rashal, E. & **Yeshurun, Y.** (2014). Contrast dissimilarity effects on crowding is not simply another case of target saliency. p. 1-31, *Journal of Vision*, In press.
Journal IF: 2.727; 5-yrs IF: 3.075; Rank: (Ophth.) 12/58 Quartile – Q1
Note: the authors have contributed equally

25. *Marciano, H. & **Yeshurun, Y.** (2014). Perceptual Load in Different Regions of the Visual Scene and Its Relevance for Driving. *Human Factors*, In press.
Journal IF: 1.290; 5-yrs IF: 1.964; Rank: (Psych, Applied.) 32/75 Quartile – Q2

26. *Eitam, B., Shoval, R. & **Yeshurun, Y.** (2014). Seeing without knowing: Task relevance dissociates between visual awareness and recognition. *Annals of the New York Academy of Sciences*, In press.
Journal IF: 4.039; 5-yrs IF: 3.854; Rank: (Multidiscip. Sci.) 6/55 Quartile – Q1

E. Articles or Chapters in Scientific Books (which are not Conference Proceedings)

Published

1. *Carrasco, M. & **Yeshurun, Y.** (2009). Covert Attention Effects on Spatial Resolution. In N. Srinivasan (Ed.) *Progress in Brain Research*. Vol 176, ATTENTION, The Netherlands: Elsevier, pp. 65-86.
   Citations: 31. Series IF: 5.103; 5-yrs IF: 4.197; Rank: (Neurosci.) 44/252 Quartile – Q1
   Note: the authors have contributed equally

F. Articles in Conference Proceedings

Published

1. *Marciano, H., & **Yeshurun, Y.** (2012). Perceptual load in central and peripheral regions and its effects on driving performance with and without collision avoidance warning system. *Actes INRETS*, 299-311.

G. Entries in Encyclopedias

None

H. Other Scientific Publications

Published abstracts of papers delivered at meetings of learned societies

1. Carrasco, M. & **Yeshurun, Y.** (1996). Effects of pre-cueing the target location on the set-size and eccentricity effects in visual search tasks. *Investigative Ophthalmology and Visual Sciences* (supp.) 37, S300.

2. Carrasco, M. & **Yeshurun, Y.** (1996). Re-evaluating the role of covert attention in visual search. 37th Annual Meeting of the Psychonomic Society. *Abstract of the Psychonomic Society* 1, 118.

3. **Yeshurun, Y.** & Carrasco, M. (1997). The effects of cueing spatial attention on discrimination tasks. *Investigative Ophthalmology and Visual Sciences* (supp.) 38, S366.

4. Carrasco, M. & **Yeshurun, Y.** (1997). Spatial attention improves observers' discrimination. 38th Annual Meeting of the Psychonomic Society. *Abstract of the Psychonomic Society* 2, 69.

5. Carrasco, M., **Yeshurun, Y.** Penpeci, C. (1998). Attention improves and impairs visual performance by enhancing spatial resolution. 39th Annual Meeting of the Psychonomic Society. *Abstract of the Psychonomic Society* 3, 13.

6. Carrasco, M., Wei, C., **Yeshurun, Y.**, Ordñua, I. (1998). Do attentional effects differ across visual fields? *European Conference on Visual Perception*. Oxford, England.

7. **Yeshurun, Y.** & Carrasco, M. (1998). Spatial attention affects acuity and texture segregation. Oxford, England. *European Conference on Visual Perception*. Oxford, England.

8. **Yeshurun, Y.** & Carrasco, M. (1998). The effects of cueing attention on an orientation texture segregation task. *Investigative Ophthalmology and Visual Sciences* (supp.) 39, B817.

9. **Yeshurun, Y.** & Carrasco, M. (1999). Attentional effects in texture segmentation as a function of the texture's spatial frequency. *Investigative Ophthalmology and Visual Sciences* (supp.) 40, S972.

10. **Yeshurun, Y.** & Carrasco, M. (1999). The locus of the attentional effects in texture segregation. 40th Annual Meeting of the Psychonomic Society. *Abstract of the Psychonomic Society* 4, 229.

11. **Yeshurun, Y.** & Carrasco, M. (2000). The locus of the attentional effects in texture segregation. *Investigative Ophthalmology and Visual Sciences* (supp.) 41, 1671.

12. **Yeshurun, Y**. & Levy, L. (2001). The effects of spatial attention on temporal resolution. *Vision Science Society*, 70-B3, 23.

13. **Yeshurun, Y**. & Levy, L. & Marom, G. (2002). Spatial attention and visual temporal processes. *Vision Science Society*, 594.

14. **Yeshurun, Y**. & Levy, L. (2003). Apparent motion is less apparent with attention. *Journal of Vision, 3(9), 168a*,

15. **Yeshurun, Y.** (2003). The effects of transient spatial attention on visual temporal processes. *International Workshop on Visual Attention.*

16. **Yeshurun, Y.** (2004). Transient attention and the integration of information across time. *Journal of Vision, 4*(8), 443a.

17. **Yeshurun, Y.** (2005). Motion perception is differentially effected by the transient and sustained components of spatial attention. *Journal of Vision, 5*(8), 141a.

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<u>*AP&P* News from the Field</u>

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I. Other Publications

None

J. Other Works Connected with my Scholarly Field

None

K. Articles Submitted for Publications

Articles under revision

1. *__Yeshurun, Y.,__ Rashal, E. & Tkacz-Domb, S. (2014). Temporal crowding and its interplay with spatial crowding. p. 1-32, *Journal of Vision*, Under minor revision.
   Journal IF: 2.479; 5-yrs IF: 2.998; Rank: (Ophth.) 13/59 Quartile – Q1

L. Summary of my Activities and Future Plans

The importance of the selection processes termed attention is rarely doubted. My main objective is to reveal the nature of the mechanisms underlying spatial attention – the selective processing of information at a given location in space, and understand how it aids perceptual processes. In particular, I study the effects of spatial attention on temporal and spatial aspects of perception as means to further our understanding of both the attentional mechanisms and perceptual tradeoffs – tradeoffs between the temporal and spatial components of visual perception and tradeoffs between integration and segregation processes. Following is a summary of my main paths of research.

Transient attention and the interplay between the spatial and temporal domains of visual perception: The main objective of this research path is to further our understanding of the interplay between the temporal and spatial components of visual perception, via the investigation of attentional effects on both the spatial and temporal aspects of perception. I have conducted several studies that revealed the effects of transient spatial attention on various temporal processes including degradation of temporal resolution[1,2], degradation of motion perception[3], prolongation of perceived duration[4], and prolongation of visible persistence. To account for these various attentional effects, as well as previous findings suggesting that attention enhances spatial resolution[5-9], I have proposed an attentional mechanism that facilitates spatial segregation and temporal integration but impairs spatial integration and temporal segregation. Thus, attention helps performance when tasks such as spatial gap detection require fine spatial segregation or when tasks such as typical visible persistence tasks require integration across time. Yet, when there is a need for spatial integration, as is the case with some texture segmentation tasks, or fine temporal segregation as with flicker detection and motion, attention degrades performance.
Currently, I am employing various experimental procedures to gather further evidence in support of this attentional mechanism and a possible physiological implementation of this mechanism suggesting that transient attention favors parvocellular (PC) over magnocellular (MC) neural activity. For instance, a recent project combined peripheral precueing with the pulsed and steady pedestal paradigms. These paradigms bias processing towards the PC and MC pathway,

respectively. As expected given these hypotheses, transient attention improved accuracy with the pulsed but not the steady pedestal paradigm[10]. Two other projects, which are currently running, employ selective adaptation as a tool for testing these ideas. One project looks for differential attentional effects on adaptation to high vs. low spatial frequency. Because the processing of high frequencies is associated with PC activity and the processing of low frequencies is associated with MC activity, if transient attention favors PC over MC activity it should magnify adaptation effects with high frequencies but minimize them with low frequencies. The other project employs plaids composed of both high and low spatial frequency gratings moving in opposite directions. The direction of motion aftereffect (MAE) resulting from adaptation to such plaids depends on whether the MAE is tested with a static stimulus (reflecting PC activity) or a flickering stimulus (reflecting MC activity). According to the above hypotheses, transient attention should prolong MAE with a static stimulus but shorten it with a flickering stimulus. Finally, we have recently started to take a closer look at the effects of transient attention on integration processes in space and time by combining peripheral cueing with several different paradigms that allow a simultaneous examination of spatial and temporal integration. These projects are conducted in collaboration with Dr. Elisabeth Hein, Tübingen University Germany and Prof. Michael Herzog, EPFL, Switzerland.

Attention as an attractor of receptive fields: Following the goal of explaining the manner by which attentional effects are modified by perceptual tradeoffs, Dr. Baruch and I have developed a computational model that portrays the attentional mechanism as an attraction field: The allocation of attention to a location attracts the centers of receptive fields towards this location. We performed several model simulations showing that this attentional attraction of receptive fields can serve as a simple unifying framework to explain a diverse range of attentional effects, linking physiological measurements at the unit level with psychophysical observations of both the spatial and temporal domains of perception[11].

Predicting Visual-Search Performance by Quantifying Stimuli Similarities: One of the prominent research paradigms in the field of attention is visual search in which the observers look for a predefined target presented among non-relevant distracters. Although this paradigm was employed by numerous studies, there is still no consensus regarding the factors mediating visual search performance. In this project, conducted together with Dr. Tamar Avraham and Prof. Michael Lindenbaum from the Technion, we extended two computational models suggested for computer-vision to account for internal-noise, and evaluated their ability to predict human search performance. We asked observers to perform an orientation-search or a color-search, and we systematically manipulated distracters' homogeneity and target-distracters similarity. In comparison to several prominent computational models of visual search, our models' predictions were the closest to human performance[12].
Currently, we extend our models to also account for the effect of spatial proximity. Previously, we only took into account feature-wise differences. In the extended models the pair-wise feature differences are replaced by a distance measure that is a superposition of the feature-wise difference and the spatial distance. This enables the models to predict, for instance, that visual search is easier when the stimuli are spatially clustered by similarity than when the same stimuli are randomly located. Accordingly, our current experiments include a manipulation of both features similarity and spatial arrangement. The importance of this project lays in the fact that along with revealing some of the principles that govern visual search it also may tell us something more general about the integration of information, particularly regarding the manner by which two different grouping principles, similarity and proximity, are integrated to generate a single coherent percept. Moreover, because the outcomes of this project bear important implications for both human and computer vision, it has both a theoretical and more applied value.

The effects of perceptual load in central and peripheral regions of the visual field: The

perceptual load theory claims that attentional selectively depends on perceptual load. Selectivity is high with high load, but low with low load. Previous studies only manipulated load levels at task-relevant regions. In this project, perceptual load was orthogonally manipulated in both relevant (central) and non-relevant (peripheral) regions. As expected, increasing peripheral load deteriorated performance, but only with low levels of central load. However, the pattern of distractor interference is not consistent with the theory because interference under high load levels was frequently found. The expected pattern of results emerged only when spatial uncertainty regarding the distractor position was low. These findings imply that spatial uncertainty plays an important role in attentional selectivity[13]. Another interesting fact revealed by this project is that there is a relatively large performance variability with this paradigm, both when comparing different participants and when comparing different experimental sessions of the same participant. Currently we are trying to understand the source of this variability by looking at executive functions abilities and fatigue.

We are also currently exploring more applied aspects of perceptual load, particularly regarding driving. In one such study, we evaluate the effects of perceptual load on driving, in a driving simulator, with and without a collision avoidance warning system. In another study we test the potentially distractive effects of road billboards. We manipulate the levels of perceptual load on the road and its sides, while critical events occur on the road or are initiated from its sides. Preliminary results regarding the warning system suggest that on some conditions the system acts like a two-edged sword: On the one hand it decreased accidents with entities on the road, but on the other hand it increased accidents with entities arriving from the road sides. In addition, it appears that billboards indeed have considerable effects on various aspects of driving like response time or number of accidents, but their effect is modulated by perceptual load[14,15].

The effects of transient attention on spatial and temporal crowding: Identifying a peripheral target surrounded by flankers is often harder than when the target is presented alone. This phenomenon is termed spatial crowding. In this research project we examined whether crowding, and particularly its spatial extent, is affected by transient attention. We measured orientation identification, while varying systematically the distance between the target and the flankers. Attention was manipulated via peripheral precues. We found a significant attentional enhancement of identification accuracy. Most importantly, we found a significant attentional reduction of the critical distance (i.e., the target-flankers distance at which the flankers no longer interfere). These findings suggest that attention reduces the spatial extent of crowding, possibly by narrowing the region over which information is integrated[16]. In a recent study we further demonstrated that similar effects can be found when the target has a higher contrast than the flankers. However, the effects of contrast dissimilarity and attention were additive, suggesting that they are likely mediated by different mechanisms[17].

Currently, we examine temporal crowding – crowding that occurs when the target is surrounded by other stimuli in time rather than space. Previously, temporal crowding was only studied at the fovea, and only a weak temporal crowding was found. Here, we test whether a stronger temporal crowding can be found when the target appears at the periphery, and further evaluate the relationships between spatial and temporal crowding[18]. Additionally, we are currently exploring whether spatial attention can alleviate the effects of temporal crowding as it does with spatial crowding.

The time course of temporal attention and its effects on basic perceptual processes: In this most recent project, I take a new research path that explores temporal attention – the selection of information from a specific point in time. The project includes two stages. The first stage includes a rigorous investigation of the time course of both endogenous and exogenous temporal attention, and how it vary as a function of various attributes such as the method employed to invoke each attentional component; the modality (visual vs. auditory) of the attentional cues; the baseline

condition characteristics; and task characteristics (speeded vs. non-speeded). The second stage includes an evaluation of the effects of exogenous and endogenous temporal attention on several aspects of visual perception that are known to be affected by spatial attention. These comprise: spatial resolution, temporal resolution, temporal integration, and texture segmentation. If successful, this project will afford a more comprehensive view of our visual system by narrowing the gap between our knowledge of spatial attention and that of temporal attention.

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14. Marciano & Yeshurun, *Work*, (2012)
15. Marciano & Yeshurun, *Actes INRETS*, (2012)
16. Yeshurun & Rashal, *Journal of Vision*, (2010)
17. Yeshurun & Rashal, *Journal of Vision*, (2014)
18. Yeshurun, Rashal & Tkacz-Domb, *Journal of Vision*, (2014)

Publications in preparation

1. *__Yeshurun, Y.__ & Rashal, E. Do object-based effects merely reduce spatial costs? In preparation

2. *Hochmitz, I. & __Yeshurun, Y.__ Transient attention and the integration of information across space and time. In preparation

3. *__Yeshurun, Y.__ Opposite effects of transient attention on adaptation to high and low spatial frequencies. In preparation

4. *Avraham, T., __Yeshurun, Y.__ & Lindenbaum, M. Modeling combined proximity-similarity effects in visual search. In preparation

5. *Carmel, T. & __Yeshurun, Y.__ Implicit learning demands awareness to the subjects of the underlying rule. In preparation

6. *Tkacz-Domb, S. & __Yeshurun, Y.__ The effects of spatial attention on temporal crowding. In preparation

7. *Tapal, A., B. Eitam & **Y. Yeshurun.** The role of suppression in Irrelevance induced blindness. In preparation