# Mark Hollins

Curriculum Vitae
May 2019

Professor Emeritus
Department of Psychology and Neuroscience
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University of North Carolina at Chapel Hill
Chapel Hill, NC 27599
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## Education

Florida State University, Tallahassee, Florida: B.A. (Psychology), 1966
Brown University, Providence, Rhode Island: M.Sc. (Psychology), 1969
Brown University, Providence, Rhode Island: Ph.D. (Psychology), 1971

## Positions Held

Professor Emeritus, Department of Psychology & Neuroscience, UNC-CH, 2019
Interim Director, Behavioral & Integrative Neuroscience Program, Dept. of Psychology & Neuroscience, UNC-Chapel Hill, 07/01/18-12/31/18
Professor of Psychology, UNC-Chapel Hill, 1990-2018
Associate Professor of Psychology, UNC-Chapel Hill, 1979-1990
Assistant Professor of Psychology, UNC-Chapel Hill, 1973-1978
Member, UNC Center for Pain Research and Innovation, 2014-present
Member, UNC Center for Neurosensory Disorders, 2005-2014
Adjunct Professor of Endodontics, 1998-2011
Member, UNC Neurobiology Curriculum, 1992-2008
Research Fellow, Brown University, 1971-1973
Postdoctoral Fellow, University of Michigan, Ann Arbor, 1970-1971

## Awards

Cobey First Year Seminars Course Enhancement Fund (2017)
Elizabeth & James E. Holmes III First Year Seminar Enhancement Fund (2016)
Kayce King First Year Seminar Enhancement Fund (2015)
Wilson Family Honors Course Development Award (2007)
Distinguished Teaching Award for Post-Baccalaureate Instruction (2007)
National Science Foundation Postdoctoral Fellowship (1970-1971)
National Science Foundation Graduate Fellowship (1966-1970)
Woodrow Wilson Fellowship Honorable Mention (1966)

## Professional Affiliations

Acoustical Society of America (Member, 1992-2002)
American Pain Society
American Psychological Association (Fellow, Division 3)
International Association for the Study of Pain
Psychonomic Society
Tactile Research Group

## Service

*Advisory/Review Panels*

Member, NIH Special Emphasis Panel ZRG1 BBBP-T (52): Basic Behavioral Research on Multisensory Processing (March 7-8, 2013).
Member, Peer Review Panel, *Journal of Visual Impairment & Blindness* (2006-present)
Member, NIH Special Emphasis Panel ZRG1 CFS-M 90: Chronic Fatigue Syndrome, Fibromyalgia Syndrome, Temporomandibular Disorders (2009-2011)
Member, Editorial Advisory Board, *Sage Encyclopedia of Perception* (2008-09)
Member, Acoustical Society of America Committee on Bioresponse to Vibration and to Ultrasound (1995-2001)

*Reviewer for:*

Behavioural Brain Research
Clinical Journal of Pain
Experimental Brain Research
Journal of Neurophysiology
Journal of Visual Impairment & Blindness
Pain
Perception
Perception & Psychophysics
PLOS ONE
PNAS (Guest Editor, 2017)
Psychological Science
Psychonomic Bulletin & Review
Somatosensory & Motor Research

*University Service*

Member, Summer Research Fellowship Review Committee (2018)
Member, Impact and Horizon Award Committee, 2013-present
Member, Graduate Education Working Group, 2017
Member, Graduate Admissions Enhancement Committee, 2011

Member, Disciplinary Panel to review proposed graduate program (Ph.D. in Applied and Experimental Psychological Science) at UNC-W, 2010
Member, Carolina Society of Fellows Faculty Board, 1996 (year of founding)-2002
Member, Advisory Board of the Cognitive Science Program, 1998-2000
Member, University Hearings Board, 1987-1997
Chair, Academic Affairs Institutional Review Board, 1989-1992

*Department Service*

Member, Behavioral and Integrative Neuroscience Program (formerly the Experimental Psychology Program), 1973-present
Member, Cognitive Psychology Program, 1989-present
Director of Graduate Studies, 1995-2018
Chair, Graduate Education Committee, 1995-2018
Member, Personnel Committee, 1990-present
Member, Instructional Committee, 2000-2018
Member, Self-Study Committee, 2017-2018
Member, Staff Excellence Award Committee, 2017-2018
Member (and occasionally Chair), Honors Committee, 2006-present
Member, Post-Tenure Review Committee, 2017-2018
Member, Merit Review Committee, 2015
Co-Chair, Neuroscience Lecturer Search Committee, 2012-2013
Member, Student Services Manager Search Committee, 2008, 2011, 2013, 2016
With Abigail Panter, developed online evaluation instrument for Psychology graduate courses, 2012
Member, Self-Study Committee, 2008-2010
Member, Lecturer Search Committee, 2005-2008
Chair, Lecturer Search Committee, 2008-2009
Co-Chair, Lecturer Search Committee 2012
Member, Lecturer Review Committee, 2007-2012
Member, Space Committee, 2006-2008
Address to Psychology Club, “How to Apply to Graduate School,” (annually, 2008-2013)
Member, Cognitive Science Program Advisory Board, 1998-2000
Member, Clinical Search Committee, 1998
Member, Cognitive Program Planning Committee, 1988
Member, Library Committee, in charge of Reading Room, 1974-1984

## Teaching

*Undergraduate Courses Taught*

Sensation and Perception (PSYC 27 in 1974; PSYC 21 in 1975-2006; PSYC 225 thereafter): *Spring 1974, Spring 1975, Fall 1975, Spring 1976 (two sections), Fall 1976, Spring 1977, Fall 1977, Spring 1978, Fall 1978, Spring 1979, Fall*

*1979, Spring 1980, SS2 1980, Fall 1980 (two sections), Spring 1981, Fall 1981 (two sections), Spring 1982 (2 sections), Fall 1982, Spring 1983 (two sections), Fall 1983, Spring 1984 (two sections), Fall 1984 (two sections), Fall 1985, Spring 1986, Fall 1986, Spring 1987, Fall 1987 (two sections), Spring 1988, Fall 1988, Spring 1989 (two sections), Fall 1989, Spring 1991, Spring 1992, Spring 1993, Fall 1993, Spring 1994, Spring 1995, Fall 1995, Fall 1996, Spring 1998, Fall 1998, Fall 2000 (three sections, with lab), Fall 2002, Fall 2003, Fall 2004, Spring 2006, Fall 2014, Fall 2018.*

Honors Sensation and Perception (PSYC 225H): *Spring 2009.*

First-Year Seminar: The Senses of Animals (PSYC 89 in 2013; PSYC 67 thereafter): *Fall 2013, Fall 2015, Fall 2016, Fall 2017.*

Sensory Processes (PSYC 120. This course focused on a different topic each year, such as Color Vision, Sensory Functions of the Cortex, Sensory Impairment, and Applications of Sensory Research): *Fall 1974, Fall 1975, Fall 1976, Fall 1977, Fall 1978, Fall 1979, Fall 1982, Fall 1983, Fall 1985, Fall 1986, Fall 1988, Fall 1994, Spring 1999.*

Advanced Perceptual Processes (PSYC 121): *Spring 1986, Spring 1987, Fall 1991, Spring 1997, Spring 2002.*

Honors in Psychology I (PSYC 693H): *Fall 2006, Fall 2009, Fall 2010.*

Honors in Psychology II (PSYC 694H): *Spring 2007, Spring 2010, Spring 2012, Spring 2014.*

General Psychology (PSYC 26 until 1974; PSYC 10 in 1975): *Fall 1973, Spring 1974, Spring 1975.*

*Graduate Courses Taught*

Biological Bases of Behavior I (PSYC 201 until 2005; PSYC 701 thereafter. I always co-taught this course with Paul Shinkman, Mitch Picker, or Charlotte Boettiger. Listed here are the years in which I was instructor of record): *Fall 1990, Fall 1992, Fall 1994, Fall 1996, Fall 2002, Fall 2005, Fall 2007, Fall 2010, Fall 2011, Fall 2014, Fall 2016.*

Seminar in Theoretical and Experimental Psychology (PSYC 325; PSYC 709 in 2012): *Spring 1977, Spring 1979, Spring 1980, Spring 1981, Spring 1990, Fall 1995, Fall 2012.*

Research Seminar in Experimental Psychology (PSYC 334): *Spring 2004.*

Proseminar in Cognitive Psychology (a 1-credit module; PSYC 209A until 1991, PSYC 209C thereafter): *Fall 1990, Fall 1991, Spring 1998, Fall 1999, Fall 2000, Spring 2003, Spring 2004.*

*Dissertations Directed*

Harper, Daniel E. (2014). Psychophysical examination of the thermal grill illusion.

Bensmaia, Sliman (2003). The vibrations of texture.

Roy, Elizabeth A. (2000). Efficacy of vibration in reducing pain of experimental and clinical origin. *(2001 James McKeen Cattell Award from the Psychology Section of the New York Academy of Sciences)*

Delemos, Kimberly A. (1994). Vibrotactile information processing: A psychophysical investigation of mechanisms.

Goble, Alan K. (1993). The functional significance of vibrotactile adaptation.

Rogers, Diane C. (1984). Perceptual changes in stereopsis, fronto-parallel vertical, and direction produced during brief monocular deprivation in adult humans.

Hudnell, H. Kenneth (1984). The relationship between binocular rivalry and saccadic eye movements.

*Dissertation Committees, Member of*

Adam Smith (Current)

Deirdre Sackett (2018)

Susser, Jonathan A. (2016). Predicting prospective memory: Metacognitive sensitivity at encoding. Advisor: Neil Mulligan.

Cerri, Domenic H. (2016). Neurobiological investigation of BLA-NAc and mPFC-NAc circuits in motivated behavior. Advisor: Regina M. Carelli.

Cassie Ford (2016)

Renske Hoedemaker (2015)

Jason Kahn (2015)

Brown-Iannuzzi, Jazmin L. (2015). Social class disparities in pain: Understanding the role of subjective socioeconomic status and hyper-vigilance to threats in predicting pain. Advisor: Keith Payne.

Matt Lowder (2014)

Courtney Cameron (2014)

Jonathan Sugam (2013)

Erol J. Ozmeral. (2013). The effects of hearing impairment on the ability to glimpse speech in a spectro-temporally complex noise. Research supervisor: Joseph W. Hall, III; Research mentor: Emily Buss; Academic advisor: Peter C Gordon.

Wonil Choi (2013)

Luv Kohli (Computer Science; 2013)

Jennifer Gibson (2012)

Stonerock, Gregory L., Jr. (2011). The utility of brief cognitive skills training in reducing pain catastrophizing during experimental pain. Advisor: Karen M. Gil.

Alison Wagner (2010)

Joshua Jones (2010)

Lawrence Miller (2010)

Jeremy Day (2009)

Beth Mechlin (2009)

Bradford Fischer (2008)

Vicki West (2007). Comparisons of the neural mechanisms of voluntary, reflexive, and socially-directed attention. Advisor: Joseph Hopfinger.

Sarah Hart (2007)
Steven Heymen (2007)
Lisa Lomas (2007)
Anthony J. Ries (2007)
Sharif Razzaque (Computer Science; 2005)
Jolan Turner (2005)
Kerry Ledoux (2002). Text interruption and the role of working memory in discourse processing. Advisor: Peter C. Gordon
Brent E. Insko (Computer Science; 2001)
Chin-Lung Yang (2000)
Stephen Folger (Biomedical Engineering; 1998)
David F. Pick. (1984). A re-examination of the Tulving amnesic effect. Advisor: Eugene R. Long.
Gregory Essick (Physiology; 1983)
Michael R. Isley. (1982). The effects of torsional disparities on the development of ocular dominance and interocular orientation disparity in kitten visual cortex. Advisor: Paul Shinkman.
James A. Green (1979)
Charles J. Bruce. (1976). Visual experience and interocular orientation matching in receptive fields of kitten visual cortical neurons. Advisor: Paul Shinkman.

*Honors Projects Directed*

Athans, Luke A. P. (2018). The effect of extended direction of attention on subsequent pressure sensations.
Fry, Cassidy (2018). Cutaneous perception and physical activity.
Bryen, Chloe (2017). Relationships among chronic pain, hypervigilance, and executive function. (*Dashiell-Thurstone Award)*
Whatley, Mary (2016). Does apparent hand size affect thermal pain perception?
Walters, Sloan (2015). The effects of induced hypervigilance in healthy subjects.
Taylor, Dillon (2015). Chronic pain history and its relationship to executive function and pain perception.
Ahlgrim, Nathan (2014). Application of intermittent vibration to fluctuating pressure pain.
Barry, Kelly (2014). Temporal aspects of the thermal grill illusion of pain.
Oehler, Michael J. (2013). Does habituation affect conditioned pain modulation?
Thio, Kara (2013). The effects of pride and admiration on pain. *(Dashiell-Thurstone Award)*
Irvin, John. (2011). Neural processing of the thermal grill illusion.
Mullis, Alicia. (2011). Chronic pain, music, and cognition.
Tracy, Quinn. (2011). Comparing placebo analgesia in Aδ and C fibers.
Brothers, Trevor. (2010). The structural role of the fingernail in force perception.
Kisaalita, Nkaku. (2007). Effects of weak auditory stimulation on vibrotactile sensory perception.
Paduchowski, Megan L. (2007). The effects of touch gating and sex on texture discrimination of fine and coarse surfaces.

Harper, Daniel E. (2006). The gating of touch in the perception of textured surfaces.
Lorenz, Florian M. (2004). Assessing texture adaption in direct and indirect touch.
O'Connor, Ryan C. (2004). A psychophysical test for the existence of frequency-tuned minichannels in the somatosensory system.
Slater, Jennifer M. (2004). Does experimental pain produce a dissociation between implicit and explicit memory?
Barber, Sarah J. (2003). A dissociation between implicit and explicit memory in participants with temporomandibular disorders. *(Dashiell-Thurstone Award)*
Yau, Jeffrey M. (2003). Pacinian-mediated representation of complex waveform.
Buckel, Katherine H. (2002). The effects of frequency discrimination training on TMD pain.
Deugwillo, Kimberly. (2002). The effects of vibratory intensity on tonic pain.
Garrison, Douglas B. (2002). Vibration as an analgesic for experimental heat pain.
Crane, Stephanie A. (2000). The effects of various frequencies of vibrotactile stimulation on tonic pain.
Risner, S. Ryan. (1998). Movement enhances differences among fine, but not coarse, textures.
Karlof, Kristie. (1997). A multidimensional scaling approach to tactile texture perception by individuals.
Stahoviak, Cynthia. (1997). Effects of ovulation and body temperature on vibrotactile and pain sensitivity.
Wedge, Joanna C. (1995). The relationship between perceived loudness and perceived pitch in vibrotactile stimulation.
Roy, Elizabeth A. (1994). Effects of complex wave adaptation on vibrotactile threshold. *(Dashiell-Thurstone Award)*
Glosser, Allison V. (1991). The effect of controlled tactile stimulation on the tactile acuity of adjacent and untrained skin surfaces.
Leger, Joanne M. (1991). The effect of skin temperature on vibrotactile amplitude matching and discrimination under conditions of adaptation.
Rao, Suman A. (1991). Categorizing objects by touch.
Boone, Andrea L. (1986). Spatial updating in blind and sighted subjects.
Pelkey, John A. (1986). The effect of field dependence on mental mapping ability.
Kelley, Elizabeth K. (1984). Spatial mapping and updating in blind and sighted subjects.
Satterfield, Michael S. (1977). The effect of convergence and retinal disparity on size-constancy.
Bunn, Kenneth W. (1976). Convergence micropsia as a function of stimulus position within the visual field.

**Research Support**

"Does Sustained Attention Intensify Later Perception of Tactile Stimuli?" Award from the Lindquist Faculty Excellence Fund (UNC, Arts & Sciences), 11/4/16-5/31/17. This award supported an experimental study of the effect of sustained attention on the later perception of tactile stimuli ranging from barely detectable to mildly painful.

"Perceiving Pain and Vibration." Award from the Lindquist Faculty Excellence Fund (UNC College of Arts & Sciences), 11/26/12-12/31/13. This award supported an experimental study of the effect of vibration on pain caused by a pressure stimulus.

"Perceptual and Cognitive Processing of Pain in Sickle Cell Disease." NINR R21 grant NR009993. 07/13/07-05/31/09. Mark Hollins (PI), Karen Gil (Co-I). This project more fully characterized pain processing in persons with SCD.

"CNS Processes Underlying Pain Regulation and Persistence." NINDS Program Project grant NS045685. 10/01/04-06/30/09. Program Director: William Maixner. Hollins was PI of Subproject 2, "Effect of Central Sensitization on Pain-Touch Interactions." The goal of this subproject was to examine sensory interactions involving pain in individuals with chronic pain conditions and in pain-free control individuals.

"Neural Networks, Pacinian Coding and Texture Perception." Grant from the UNC Cognitive Science Program, 10/22/02-06/30/05. (Hollins, PI). The overall goal of this project is to develop a quantitative understanding of how the Pacinian system uses temporal information to distinguish among fine textures.

"Cutaneous Vibration and Its Role in Texture Perception." NSF grant SBR-9514432. 08/15/96-07/31/00. (Hollins, PI). The overall goal of this research was to examine the role of cutaneous vibration, created by lateral movement between tactile stimuli and skin, in the perception of fine surface texture.

"A Mathematical Model of Mechanoreception." UNC Cognitive Science Program grant, 03/09/00-09/18/02. Hollins was PI and Sliman Bensmaia was Co-PI. The overall goal of this project was increase understanding of the way in which receptor coding mechanisms contribute to the discriminability of vibrotactile waveforms.

"Categorizing Objects by Touch." University Research Council grant 44424, 12/01/91-11/30/93. (Hollins, PI). This award funded research on tactile texture perception using multidimensional scaling.

"Central Components of Mechanoreceptive Adaptation." BRSG award, 04/01/91-09/29/92. (Hollins, PI). The goal of this project was to explore the role of central (CNS) factors in the rapid adaptation that occurs to a temporally extended cutaneous vibration.

"Role of CNS Adaptive Mechanisms in Orofacial Sensation." NIH Program Project grant DE07509. 07/01/86-11/30/03. Support consisted of three 5-year awards. Barry Whitsel was Program Director initially; William Maixner assumed this role after the first renewal. Hollins was PI of the following subprojects:

- Subproject 3, "Central Adaptation to Cutaneous Flutter-Vibration in Man." 07/01/86-06/30/91. This research used vibratory adaptation as a tool to isolate and examine different cutaneous mechanoreceptive channels in the hand and the face.
- Subproject 2, "Central Components of Vibrotactile Adaptation in Normals and Persons with Disorders of Orofacial Somesthesis." 04/15/92-03/31/97. The aim of this research was to compare, in healthy subjects and those with orofacial disorders (mainly TMD), the effects of vibratory adaptation on absolute and differential thresholds and suprathreshold loudness.
- Subproject 2, "Experimental Analysis of Vibratory Analgesia in Normals and Persons with Temporomandibular Disorders." 12/01/97-11/30/02. The goal of this subproject was to examine the effect of sensory factors such as stimulus frequency, intensity, and location on the ability of vibration to reduce both experimental and clinical pain.

"Patterns of Hand Movement during Tactile Shape Perception." University Research Council grant 43820, 12/01/85-05/29/88. (Hollins, PI). This research tested (and rejected) the notion that hand movements systematically distort the measured rate of mental rotation of haptic images.

"Does Difficulty in Orienting Limit the Mobility of Congenitally Blind Persons?" University Research Council grant 43744, 05/01/85-04/30/87. (Hollins, PI). This research compared the ability, in sighted and blind persons, to orient toward an object the location of which they demonstrably knew.

"Memory for Spatial Relationships in Congenitally Blind Subjects." University Research Council grant 43530, 11/18/83-11/17/85. (Hollins, PI). This research examined the ability of congenitally blind people to update their knowledge of egocentric object location following changes of their own location.

"Visual Imagery in Adventitiously Blind Persons: Can Its Decline be Reversed by Training?" Spencer Foundation Grant to Young Scholars MR064, 07/01/82-12/31/83. (Hollins, PI). The research supported by this award represented a transitional stage between earlier work on vision, and later work on somatosensation.

"Apparent Rate of a Flickering Light: Evidence for 'Perceptual Moments'?". University Research Council grant VP395, 11/11/81-11/10/83. (Hollins, PI).

This award funded the service contract on a PDP lab computer used in multiple lines of research.

"The Influence of Test Flash Temporal Frequency on the Measurement of Binocular Rivalry Suppression." University Research Council grant VP307, 11/13/80-11/12/82. (Hollins, PI). These experiments showed that rivalry predominance is not determined by the relative latency of visual signals from the two eyes.

"Sensory and Motor Factors in Binocular Rivalry." NSF grant BNS-7723050. 03/01/78-11/30/81. (Hollins, PI). The overall goal of this project was to determine the roles of eye movements, central adaptation, and other factors in binocular rivalry.

"Adaptation of the Binocular Rivalry Mechanism." University Research Council grant VP031, 11/02/77-11/01/79. (Hollins, PI). This award funded pilot experiments helpful in obtaining the NSF grant listed above.

"Causes and Time Course of Accommodative Micropsia." National Eye Institute grant 1 R23 EY 01391, 05/01/74-04/30/77. (Hollins, PI). This research examined the effects of accommodation and convergence on size perception, and how these effects vary with retinal location.

"Color Vision in the Peripheral Retina." University Research Council grants VF384 and VC548, 11/14/73-11/14/75 and 04/17/74-04/16/76. (Hollins, PI). In lieu of start-up funds, these two awards helped me set up my lab, and funded pilot work helpful in obtaining the NEI grant listed above.

[No title]. UNC Smith Fund grant 52002, 09/19/73-09/18/74. (Hollins, PI). This $100 award enabled me to purchase initial lab supplies.

**Publications**

Hollins, M., Bryen, C., & Taylor, D. (Under review). Effects of chronic pain history on perceptual and cognitive inhibition.

Harper, D. E., & Hollins, M. (2017). Conditioned pain modulation dampens the thermal grill illusion. *European Journal of Pain, 21*, 1591-1601. doi: 10.1002/ejp.1060

Hollins, M., Corsi, C., & Sloan, P. (2017). Pacinian signals determine the direction and magnitude of the effect of vibration on pain. *Perception, 46*, *987-999*. doi: 0.1177/0301006617694630

Sloan, P., & Hollins, M. (2017). Attention and pain: are auditory distractors special? *Experimental Brain Research, 235*, 1593-1602. doi: 10.1007/s00221-017-4903-x

Hollins, M., & Walters, S. (2016). Experimental hypervigilance changes the intensity/unpleasantness ratio of pressure sensations: evidence for the generalized hypervigilance hypothesis. *Experimental Brain Research, 234*, 1377-1384. doi: 10.1007/s00221-015-4541-0.

Brothers, T., & Hollins, M. (2014). Two sensory channels mediate perception of fingertip force. *Perception, 43*, 1071-1082.

Harper, D., & Hollins, M. (2014). Coolness both protects against and underlies the painfulness of the thermal grill illusion. *Pain, 155,* 801-807. doi: 10.1016/j.pain.2014.01.017

Hollins, M., McDermott, K., & Harper, D. (2014). How does vibration reduce pain? *Perception, 43,* 70-84. doi: 10.1068/p7637

Hollins, M., Stonerock, G. L., Kisaalita, N. R., Jones, S., Orringer, E., & Gil, K. M. (2012). Detecting the emergence of chronic pain in sickle cell disease. *Journal of Pain and Symptom Manangement, 43,* 1082-1093. doi: 10.1016/j/painsymman.2011.06.020 (PMID: 22579409)

Harper, D. E., & Hollins, M. (2012). Is touch gating due to sensory or cognitive interference? *Pain, 153,* 1082-1090. doi: 10.1016/j.pain.2012.02.011 (PMID: 22421428)

Hollins, M., Harper, D., & Maixner, W. (2011). Changes in pain from a repetitive thermal stimulus: The roles of adaptation and sensitization. *Pain, 152,* 1583-1590. doi: 10.1016/j.pain.2011.02.049 (PMID: 21454015).

Nebel, M. B., Folger, S., Tommerdahl, M., Hollins, M., McGlone, F., & Essick, G. (2010). Temporomandibular disorder modifies cortical response to tactile stimulation. *Journal of Pain, 11,* 1083-1094. doi: 10.1016/j.jpain.2010.02.021 (PMID: 20462805).

Hollins, M. (2010). Somesthetic senses. *Annual Review of Psychology, 61*, 243-271. doi:10.1146/annurev.psych.093008.100419 (PMID: 19575612).

Hollins, M. (2010). Multimodal interactions: pain-touch. In *Encyclopedia of Perception*, pp. 589-590. Los Angeles, CA: Sage Publications.

Hollins, M. (2010). Texture perception: tactile. In *Encyclopedia of Perception, pp. 987-991.* Los Angeles, CA: Sage Publications.

Hollins, M., Harper, D., & Maixner, W. (2009). Response to the letter to the editor by Van Damme and colleagues. *Pain, 144,* 343-344.

Yau, J. M., Hollins, M., & Bensmaia, S. J. (2009). Textural timbre: the perception of surface microtexture depends in part on multimodal spectral cues. *Communicative and Integrative Biology, 2,* 344-346. (PMID: 19721886).

Hollins, M., Harper, D., Gallagher, S., Owings, E. W., Lim, P. F., Miller, V., Siddiqi, M. Q., & Maixner, W. (2009). Perceived intensity and unpleasantness of cutaneous and auditory stimuli: An evaluation of the generalized hypervigilance hypothesis. *Pain*, 141, 215-221. (PMID: 19121558).

Hollins, M., & Bensmaïa, S. J. (2007). The coding of roughness. *Canadian Journal of Experimental Psychology, 61,* 184-195.

Hollins, M., Lorenz, F., & Harper, D. (2006). Somatosensory coding of roughness: The effect of texture adaptation in direct and indirect touch. *Journal of Neuroscience, 26,* 5582-5588.

Higashiyama, A., Hollins, M., & Maixner, W. (2006). Tactile orientation constancy: Do proprioception and attention affect the tactile vertical? *Japanese Psychological Research, 48,* 255-269.

Hollins, M., Lorenz, F., Seeger, A., & Taylor, R. (2005). Factors contributing to the integration of textural qualities: Evidence from virtual surfaces. *Somatosensory & Motor Research, 22,* 193-206.

Tommerdahl, M., Hester, K. D., Felix, E. R., Hollins, M., Favorov, O. V., Quibrera, P. M., & Whitsel, B. L. (2005). Human vibrotactile frequency discriminative capacity after adaptation to 25Hz or 200Hz stimulation. *Brain Research, 1057,* 1-9.

Bensmaïa, S. J., & Hollins, M. (2005). Pacinian representations of fine surface texture. *Perception & Psychophysics, 67,* 842-854.

Bensmaïa, S. J., Hollins, M., & Yau, J. (2005). Vibrotactile intensity and frequency information in the Pacinian system: a psychophysical model. *Perception & Psychophysics, 67,* 828-841.

Hollins, M., Seeger, A., Pelli, G., & Taylor, R. (2004). Haptic perception of virtual surfaces: Scaling subjective qualities and interstimulus differences. *Perception, 33,* 1001-1019.

Hollins, M., Roy, E. A., & Crane, S. A. (2003). Vibratory antinociception: Effects of vibration amplitude and frequency. *The Journal of Pain, 4,* 381-391.

Roy, E. A., Hollins, M., & Maixner, W. (2003). Reduction of TMD pain by high-frequency vibration: a spatial and temporal analysis. *Pain, 101,* 267-274.

Bensmaïa, S. J., & Hollins, M. (2003). The vibrations of texture. *Somatosensory & Motor Research, 20,* 33-43.

Hollins, M. (2002). Touch and haptics. In Pashler, H. (Editor-in-chief), & Yantis, S. (Volume Editor), *Stevens' handbook of experimental psychology, Third edition, Vol. 1* (pp. 585-618). New York, NY: John Wiley & Sons.

Hollins, M., Bensmaïa, S. J., & Roy, E. A. (2002). Vibrotaction and texture perception. *Behavioural Brain Research, 135,* 51-56.

Hollins, M., Bensmaia, S. J., & Washburn, S. (2001). Vibrotactile adaptation impairs discrimination of fine, but not coarse, textures. *Somatosensory & Motor Research, 18,* 253-262.

Hollins, M., Fox, A., & Bishop, C. (2000). Imposed vibration influences perceived tactile smoothness. *Perception, 29,* 1455-1465.

Hollins, M., Sigurdsson, A., & Morris, K. A. (2001). Local vibrotactile and pain sensitivities are negatively related in temporomandibular disorders. *The Journal of Pain, 2,* 46-56.

Hollins, M., Bensmaïa, S., Karlof, K., & Young, F. (2000). Individual differences in perceptual space for tactile textures: Evidence from multidimensional scaling. *Perception & Psychophysics, 62,* 1534-1544.

Bensmaïa, S. J., & Hollins, M. (2000). Complex tactile waveform discrimination. *Journal of the Acoustical Society of America, 108*, 1236-1245.

Hollins, M. (2000). Vision impairment and cognition. In B. Silverstone, M. A. Lang, B. P. Rosenthal & E. E. Faye (Eds.-in-chief*), The Lighthouse handbook on vision impairment and vision rehabilitation. Vol. 1. Vision impairment* (pp. 339-358). New York: Oxford University Press.

Hollins, M., & Risner, S. R. (2000). Evidence for the duplex theory of tactile texture perception*. Perception & Psychophysics, 62*, 695-705.

Fillingim, R. B., Fillingim, L. A., Hollins, M., Sigurdsson, A., & Maixner, W. (1998). Generalized vibrotactile allodynia in a patient with temporomandibular disorder. *Pain, 78,* 75-78.

Roy, E. A., & Hollins, M. (1998). A ratio code for vibrotactile pitch. *Somatosensory and Motor Research, 15,* 134-145.

Hollins, M., & Sigurdsson, A. (1998). Vibrotactile amplitude and frequency discrimination in temporomandibular disorders. *Pain, 75,* 59-67.

Hollins, M., and Roy, E. A. (1996). Perceived intensity of vibrotactile stimuli: The role of mechanoreceptive channels. *Somatosensory and Motor Research, 13*, 273-286.

Hollins, M., Sigurdsson, A., Fillingim, L., and Goble, A. K. (1996). Vibrotactile threshold is elevated in temporomandibular disorders. *Pain, 67*, 89-96.

Hollins, M., Delemos, K. A., and Goble, A. K. (1996). Vibrotactile adaptation of the RA system: A psychophysical analysis. In O. Franzén, R. Johansson, and L. Terenius (Eds.), *Somesthesis and the neurobiology of the somatosensory cortex* (pp. 101-111). Basel: Birkhäuser Verlag.

Delemos, K. A., and Hollins, M. (1996). Adaptation-induced enhancement of vibrotactile amplitude discrimination: The role of adapting frequency. *Journal of the Acoustical Society of America, 99*, 508-516.

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## Presentations/Abstracts

Hollins, M., & Walters, S. (2015). Experimentally-induced hypervigilance modifies perception of cutaneous pressure. Poster to be presented at the 56th Annual Meeting of the Psychonomic Society, Chicago, IL, November 19-22. [*Abstracts of the Psychonomic Society, 20,* 280.]

Sloan, P., & Hollins, M. (2015). Emotional sounds, even when unattended, change pain unpleasantness. Poster presented at the annual meeting of the North Carolina Cognition Group, Elon University, February 21.

Harper, D. E., & Hollins, M. (2013). Cool adaptation reduces the pain of the thermal grill illusion. 557.10 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience. Online.

Harper, D. E., Irvin, J. P., Hollins, M. (2012). Descending inhibition disrupts the thermal grill illusion of pain. 675.03 2012 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience. Online.

Hollins, M. (2010). Stages of pain processing: A psychophysical analysis. Colloquium at the Department of Psychology, Purdue University, West Lafayette. October 6.

Hollins, M., Stonerock, G.L., Kisaalita, N.R., Jones, S., Orringer, E., & Gil, K.M. (2010). Hypervigilance and catastrophizing, but not temporal summation, are elevated in sickle cell disease. Poster presented at the 29th Annual Scientific Meeting of the American Pain Society, Baltimore, May 6-8. [*Journal of Pain, 11*(4), Supplement 1, S20.]

Hollins, M., Harper, D., & Gallagher, S. (2009). Does gradual sensitization block vibrotactile pain gating? Poster presented at the 28th Annual Scientific Meeting of the American Pain Society, San Diego. May 7-9. [*Journal of Pain, 10* (4), Supplement 1, S31.]

Hollins, M. (2008). Sensory coding and interaction in touch and pain. In New Fellows symposium—Part 1: Perception and cognition. Paper presented at the 116th Convention of the American Psychological Association, Boston. August 14-17.

Nebel, N.B., Folger, S., Hollins, M., & Essick, G. (2008). fMRI brain representation of non-facial tactile stimulation in TMD. Poster presented at the 86th General Session and Exhibition of the International Association for Dental Research, Toronto, Canada. July 2-5.

Hollins, M. (2008). Stages of pain processing: A psychophysical analysis. Invited talk at the Duke University Center for Cognitive Neuroscience. April 10.

Hollins, M., Harper, D. E., Gallagher, S. M., & Maixner, W. (2007). Hypervigilance does not increase the loudness of unpleasant sounds. Paper presented at the 48th Annual Meeting of the Psychonomic Society, Long Beach CA, November 15-18. [*Abstracts of the Psychonomic Society, 12,* 35.]

Hollins, M., & Lorenz, F. M. (2005). Adaptation to textured surfaces: A comparison of direct and indirect touch. Paper presented at the 46th Annual Meeting of the Psychonomic Society, Toronto, November 10-13. [*Abstracts of the Psychonomic Society, 10,* 20.]

Hollins, M. (2005). Perceptual qualities of surfaces: Is stickiness special? Paper presented at the *Softness and Smoothness Workshop* sponsored by Unilever Corporation, Weehawken, NJ, June 1-2.

Hollins, M. (2003). Graduate seminar presented in the Department of Electrical and Computer Engineering, Purdue University (West Lafayette, IN), Oct 23.

Bensmaïa, S., Hollins, M. & Yau, J. (2003). The Pacinian system and the discrimination of high-frequency complex tactile waveforms: A neural model. Poster presented at the annual North Carolina Cognition Conference, Durham, February.

Hollins, M., Roy, E. A., & Crane, S. A. (2002). Vibration affects sensitivity to a noxious stimulus. Paper presented at the annual meeting of the Tactile Research Group, Kansas City, MO, Nov 21.

Bensmaïa, S. J., Hollins, M., & Johnson, M. L. (2000). The vibrations of texture. Paper presented (by S. J. Bensmaïa) at the annual meeting of the Tactile Research Group, New Orleans, November 16.

Hollins, M., & Bensmaïa, S. J. (2000). Vibrotactile adaptation impairs discrimination of fine textures. Paper presented at the 41st Annual Meeting of the Psychonomic Society, New Orleans, November 16-19. [*Abstracts of the Psychonomic Society, 5,* 17.]

Seeger, A., Henderson, A., Pelli, G. L., Hollins, M., & Taylor, R. M., II. (2000). Haptic display of multiple scalar fields on a surface. Paper presented (by A. Seeger) at Conference on Information and Knowledge Management (CIKM) Workshop on New Paradigms in Information Visualization and Manipulation, Vienna, VA, November 10.

Roy, E.A., Hollins, M., Crane, S.A., & Maixner, W. (2000). Both High and Low Vibration Frequencies Reduce Tonic Pain. Poster presented at the 1st Annual Southeastern Academic Pain Symposium, *Pain Related Suffering*, Durham, NC, October 20-22.

Hollins, M., Pelli, G. L., Seeger, A., & Taylor, R. M., II. (2000). Perceptual space for texture dimensions: What is the metric? Paper presented (by G. L. Pelli) at the 2nd Phantom Users Research Symposium (PURS 2000), Zurich, Switzerland, July 6-7 (http://www.vision.ee.ethz.ch/~purs2000/).

Roy, E. A., Maixner, W., & Hollins, M. (1999). Effects of Vibration on Pain Associated with TMD. Poster presented at the 18th Annual Meeting of the American Pain Society, Fort Lauderdale, October 21-24.

Hollins, M. (1999).“Experimental Analysis of Vibrotactile Analgesia,” talk given at the Tactile Research Group, Los Angeles, November 18, 1999.

Hollins, M. (1999). Vibrotaction and Texture Perception. Talk given at the International Symposium on Brain Mechanisms of Tactile Perception, Stockholm, October 11-13.

Roy, E. A., Maixner, W., & Hollins, M. (1999). Effects of vibration on pain associated with TMD. Poster presented at the 18th Annual Scientific Meeting of the American Pain Society, Fort Lauderdale, October 21-24, 1999.

Hollins, M., Bensmaïa, S., & Risner, R. (1998). The duplex theory of tactile texture perception. In Grondin, S., & Lacouture, Y. (Eds.), *Fechner Day 98. Proceedings of the Fourteenth Annual Meeting of the International Society for Psychophysics* (pp. 115-120). Québec, Canada: The International Society for Psychophysics.

Hollins, M. (1997). Overview of tactile sensibility. Presentation at *Somatosensation and the Underlying Neural Mechanisms* conference, November 13-15, Chapel Hill, NC.

Hollins, M., and Roy, E. A. (1996). Channel contributions to perceived intensity of vibrotactile stimuli. *Abstracts of the Psychonomic Society, 1,* 74.

Roy, E. A., and Hollins, M. (1996). A model of vibrotactile loudness. *Journal of Mathematical Psychology, 40,* 350. Paper presented at the 29th annual meeting of the Society for Mathematical Psychology, University of North Carolina at Chapel Hill, August 1-4.

Hollins, M., Fillingim, L. A., and Goble, A. K. (1994). Vibrotactile threshold and TMD. *Program of the 35th Annual Meeting of the Psychonomic Society*, p. 4.

Hollins, M., Delemos, K. A., and Goble, A. K. (1994). Vibrotactile adaptation as an analytical tool. Paper presented at the International Symposium on Somesthesis and the Neurobiology of the Somatosensory Cortex, Stockholm, Sweden, August 29-31.

Goble, A. K., and Hollins, M. (1993). Vibrotactile adaptation enhances frequency discrimination. *Bulletin of the Psychonomic Society, 31*, 356.

Hollins, M. (1993). Vibrotactile threshold is elevated in TMD patients. Invited colloquium (Baule Colloquium Series), Institute for Sensory Research, Syracuse University, June 21.

Hollins, M. (1992). A tactile movement aftereffect. *Bulletin of the Psychonomic Society, 30*, 446.

Hollins, M., Goble, A. K., and Delemos, K. A. (1991). Vibrotactile adaptation. *Journal of the Acoustical Society of America, 89*, 2002.

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Hudnell, H. K., and Hollins, M. (1985). The influence of saccadic eye movements on binocular rivalry. *Investigative Ophthalmology and Visual Science, 25*, Supplement, p. 241.

Hollins, M. (1984). Haptic mental rotation in blind and sighted subjects. Talk presented at the annual meeting of the Cognition Group of North Carolina. UNC-Charlotte, December 1.

Rogers, D. C., and Hollins, M. (1981). Color does not influence binocular rivalry for red-green dichromats. *Investigative Ophthalmology and Visual Science, 20*, Supplement, p. 225.

Hudnell, H. K., and Hollins, M. (1979). Fatigue of the suppression mechanism following prolonged binocular rivalry. *Investigative Ophthalmology and Visual Science*, Supplement, p. 173.

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Dreyer, D. A., Hollins, M., Whitsel, B. L., and Allen, E. E. (1976). Behavioral measures of cutaneous sensitivity. *Society for Neuroscience Abstracts, 2*, 933.

Hollins, M., and Bunn, K. W. (1976). The effect of retinal eccentricity on convergence micropsia. *Bulletin of the Psychonomic Society, 8*, 253.

Hollins, M. (1971). Brightness contrast at low levels of luminance. Paper presented at the meeting of the Association for Research in Vision and Ophthalmology, Sarasota, Florida, April 26-30.