

SUSAN J. NORTON, PhD CCC-A  
Seattle Children's Hospital  
4800 Sand Point Way NE  
MS OA.8.300.8  
Seattle, WA 98105

**EDUCATION AND TRAINING:**

**Undergraduate Education**

B.A. Speech Pathology 1967-1971  
University of Denver  
Denver, CO

**Graduate Education**

M.S. Audiology 1971-1973  
Purdue University  
West Lafayette, IN

Ph.D. Hearing Sciences 1979-1982  
University of Washington  
Seattle, WA

**Postgraduate Education**

NIH Postdoctoral Fellow 1982-1984  
Boys Town National Research Hospital  
Omaha, NE

**FACULTY POSITIONS:**

**Assistant Professor** 1984-1988  
Hearing and Speech Department  
University of Kansas Medical Center  
Kansas City, KS

**Associate Professor (with Tenure)** 1988-1991  
Hearing and Speech Department  
University of Kansas Medical Center  
Kansas City, KS

**Associate Professor** 1991 - 2001  
Department of Otolaryngology - Head & Neck Surgery

4/5/2017

Univeristy of Washington School of Medicine  
Seattle, WA

**Professor**

2001-present

Department of Otolaryngology - Head & Neck Surgery  
Univeristy of Washington School of Medicine  
Seattle, WA

**Adjunct Associate Professor**

1991 - 2001

Department of Speech and Hearing Sciences  
Univeristy of Washington  
Seattle, WA

**Adjunct Professor**

2001-present

Department of Speech and Hearing Sciences  
Univeristy of Washington  
Seattle, WA

**POSITIONS HELD:**

Director

1995 - present

Family Conversations Early Intervention Program  
for Deaf and Hard of Hearing Infants and Their Families  
Seattle, WA.

Chief

1991 - present

Research & Clinical Audiology  
Children's Hospital & Regional Medical Center  
Seattle, WA.

Co-Director

1994-present

Pediatric Cochlear Implant Program  
Children's Hospital & Regional Medical Center  
Seattle, WA.

Affiliate

1991 present

Virginia Merrill Bloedel Hearing Research Center  
University of Washington  
Seattle, WA

Affiliate

1991 - present

Child Health and Human Development Center

**4/5/2017**

University of Washington Seattle, WA	
Faculty Center on Aging University of Kansas Medical Center Kansas City, KS	1988 - 1991
Key Investigator Mental Retardation Research Center University of Kansas Medical Center Kansas City, KS.	1985 - 1991
Research Assistant, Hearing Research Laboratory Department of Speech and Hearing Sciences, University of Washington Seattle WA.	1980 - 1982.
Teaching Assistant Department of Speech and Hearing Sciences University of Washington Seattle, WA.	1979 - 1980
Research Technician Auditory Evoked Response Laboratory Otolaryngology Seattle, V.A. Medical Center, Seattle, WA.	1978 - 1979.
Research Audiologist Rehabilitative Engineering Harvard-MIT Health Sciences Consortium Research Laboratory of Electronics Massachusetts Institute of Technology Boston, MA	1975 - 1978.
Audiologist Hearing and Speech Division and Neurology Learning Disabilities Clinic Children <input type="checkbox"/> s Hospital Medical Center Boston, MA.	1973 - 1977
Research Assistant	1972 - 1973.

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Auditory Evoked Response Laboratory  
Purdue University  
West Lafayette, IN.

Speech and Language Clinician 1971  
Colorado State Home and Training School  
Wheatridge, CO

**HONORS AND AWARDS:**

Scholar's Program 1967-1971  
University of Denver  
Denver, CO

Rehabilitation Services Administration Fellowship 1971-1973  
Purdue University  
West Lafayette, IN

NINCDS Individual Post-Doctoral Research Fellowship 1982-1984  
Boys Town National Research Hospital  
Omaha, NE

Developing Investigator Research Award 1987  
School of Allied Health  
University of Kansas Medical Center  
Kansas City, KS

American Auditory Society Editor's Award 2000  
For Outstanding Research in Audiology & Hearing Science

Outstanding Alumnus 2008  
University of Washington  
Department of Speech & Hearing Sciences

**CERTIFICATION:**

Certificate of Clinical Competence in Audiology (CCC-A) 1974 -present  
American Speech-Language-Hearing Association

State of Washington Liscensed Audiologist 2000-present

4/5/2017

**PROFESSIONAL ORGANIZATIONS:**

Acoustical Society of America	1979 - present
American Speech-Language-Hearing Association	1972 - present
Association for Research in Otolaryngology	1982 -present
American Academy of Audiology	1990– present
American Auditory Society	1996-present
Alexander Graham Bell Association for the Deaf	2003- present
Washington Speech Language & Hearing Association Board Member	2004-2006

**TEACHING RESPONSIBILITIES:**

University of Washington - 100%

Management of Hearing Impaired Children – Graduate Level  
Cochlear Implants – Graduate Level

University of Kansas Medical Center - 100%

Taught Yearly:

Advanced Diagnostic Audiology - Graduate Level  
Disorders of Hearing - Graduate Level  
Psychoacoustics - Graduate Level

**Graduate Level Seminars:**

Cochlear Implants  
Psychoacoustics in Hearing Impaired Listeners  
Cochlear Mechanics  
Neurobiology of Hearing - Co-taught with Tom Img, Dept. of Physiology  
Middle Ear Immittance Measurements  
Structure & Function of Auditory Efferents  
Oto-acoustic Emissions: Theory and Applications

**Trainees (Past Five Years)**

Kay Chang, MD - Resident Postdoctoral Fellow	1992 - 1996
Kevin Franck, Ph.D. - Doctoral Student	1995 - 1999
Dawn Konrad-Martin, Ph.D. - Doctoral Student	1996 - 1999
Kathleen C.Y. Sie, MD - CIDA Co-Sponsor	1996 - 2000
Benjamin Cilento, MD, Resident Postdoctoral Fellow	2001 - 2002
Ryan Stern, MD, Resident Postdoctoral Fellow	2003 - 2004
Heather Parrish, Doctoral Student	2004 - 2006
Stephanie Missone, MD Resident Postdoctoral Fellow	2005 - 2010

**NATIONAL/INTERNATIONAL PROFESSIONAL ACTIVITIES:**

Research and Scientific Affairs Committee American Speech-Language-Hearing Association	1999 - 2003
European Economic Union Working Group on Early Identification of Hearing Loss	1999 - 2000
State of Washington, Department of Health Washington State Steering Committee Early Identification and Intervention for Hearing Loss	1998 - present
NIDCD Task Force on Early Identification, Diagnosis and Intervention of Hearing Loss,	1997 - 2000
Local Organizing Committee Joint International Congress of Acoustics Acoustical Society of America Meeting Seattle, WA	1997 - 1998
Consultant, European Economic Union, Working Group on Otoacoustic Emissions	1993 - 1995
Program Committee Association for Research in Otolaryngology	1994 - 1999
Advisory Board Center for Hearing Loss in Children Boys Town National Research Hospital Omaha, NE	1990-1996
ANSI Working Group on Standards for Otoacoustic Emissions	1995 - 2000
NIDCD HAR Study Section	1991-1995

Task Force on Audiology and Speech-Language Pathology Current Procedural Terminology (CPT) Classifications American Speech-Language-Hearing Association	1993 - 1997
International Symposium Organizer "Oto-acoustic Emissions: Theory, Techniques and Applications"	1991
Consultant Rhode Island Hearing Assessment Project; Early Identification of Hearing Impaired Children: Expanding and Refining Existing Best Practices, Providence, RI	1990-1991
Hearing Science, Chair, American Speech-Language-Hearing Association, Annual Convention St. Louis, MO	1989
Committee on Doctoral Education American Speech-Language-Hearing Association	1989-1991
Committee on Psychological and Physiological Acoustics Acoustical Society of America	1987-1990
Associate Editor, Journal of Speech Language & Hearing Research	2004-2007
Consultant FDA ENT Device Panel	2006-2013
Organizing Committee CI2009	2008-2009
Member FDA ENT Device Panel	2013-present

**UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE COMMITTEES:**

Medical School Admissions Committee,	1997 - 2005
Search Committee, Chief of Audiology Department of Otolaryngology - Head & Neck Surgery	1996 – 1997, 2001-2002

**PRINCIPAL RESEARCH INTERESTS**

Cochlear implants in young children  
Early intervention outcomes.  
Detection of hearing impairment in neonates and infants.  
Correlation between physiological, acoustical and behavioral measures of peripheral auditory function.

**RESEARCH FUNDING:** (All as Principal Investigator)

- NINCDS Individual Post-Doctoral Fellowship Award, "Behavioral and Acoustic Measures of Non-linearities", 1982-1984
- NINCDS Academic Research Enhancement Award, "Characteristics of Oto-acoustic Emissions", October 1985 - October 1987.
- NINCDS Clinical Investigator Development Award, "Otoacoustic Emission in Normal and Non-Normal Ears", April 1987 - March 1992.
- DRF Deafness Research Foundation Grant, "The Relationships Between Evoked Oto-acoustic Emissions and Cochlear Potentials in Human Ears", January 1988 - December 1990.
- KUMC Center on Aging, "Age-Associated Changes in and the Relationship Between Cochlear Mechanics and Speech Understanding in Noise", September 1988 - June 1990.
- DRF "Age-Associated Changes in Cochlear Mechanics" January - December 1991.
- NIDCD R01 "Non-Invasive Measurements of Human Cochlear Mechanics", March 1990 - February 1995.
- NIDCD R10 "Identification of Neonatal Hearing Impairment", April 1993 - August 2000.
- ONR "Evoked Otoacoustic Emissions and Inner-Ear Damage from Noise Exposure", October 1993 - September 1998.
- ADAI "Prevalence of Hearing Loss in Children with Fetal Alcohol Syndrome", 1994 - 1995.
- OSPI "Early Intervention Home Instruction Program for Hearing Impaired Infants and Their Families", 1995 - 2008.
- AUDC/CDC "Monitoring of Risk Factors for Late-onset Hearing Loss" 2004 – 2008
- NIDCD SBIR "A Wide Band Reflectance - DPOAE (WR-DP) Screener" 2005-2007 Subcontract from Mimosa Acoustics
- PFEIFFER FOUNDATION "Role of congenital cytomegalovirus (CMV) infection in pediatric hearing loss" 2007-2010



**BIBLIOGRAPHY:**

- Norton, S.J., Schultz, M.C., Reed, C.M., Braida, L.D., Durlach, N.I., Rabinowitz, W.M. Chomsky, C. Analytic results of tadoma: Background and preliminary results. Journal of Speech and Hearing Research, 1977, 20, 574-595.
- Palfrey, J., Hanson, M.A., Norton, S.J., Pleszcynska, C. & Levine, M. Selective hearing screening for very young children. Clinical Pediatrics, 1979, 19, 473-477.
- Dobie, R.A. & Norton, S.J. Binaural interaction in human auditory evoked responses. EEG & Clinical Neurophysiology, 1980, 49, 303-313.
- Norton, S.J. & Weber, D.L. Relations between cubic-difference-tone generation and suppression. Journal of Acoustical Society of America, 1984, 76, 44-49.
- Schultz, M.D., Norton, S.J., Conway-Fithion, S. & Reed, C.M. A survey of the tadoma method in the United States and Canada. Volta Review, 1984, 86, 282-291.
- Wier, C.C., Norton, S.J. & Kincaid, G.E. Spontaneous narrowband acoustic signals emitted by human ears: A replication. Journal of Acoustical Society of America, 1984, 76, 1248-1250.
- Wier, C.C., Schlauch, R.S. & Norton, S.J. Relations among critical bands, critical ratios, and intensity difference limens in man. Journal of Acoustical Society of America, 1984, 76, 1051-1057.
- Jesteadt, W. & Norton, S.J. The role of suppression in psychophysical measures of frequency selectivity. Journal of Acoustical Society of America, 1985, 78, 365-375.
- Neely, S.T., Norton, S.J., Gorga, M.P. & Jesteadt, W. Latency of oto-acoustic emissions and brainstem wave V responses using tone-burst stimuli. Journal of the Acoustical Society of America, 1987, 83, 652-656.
- Norton, S.J. & Mott, J.B. Effects of auditory fatigue on psychophysical estimates of cochlear non-linearities. Journal of the Acoustical Society of America, 1987, 82, 80-87.
- Norton, S.J. & Neely, S.T. Tone-burst evoked oto-acoustic emissions from normal-hearing subjects. Journal of Acoustical Society of America, 1987, 81, 1860-1872.
- Mott, J.B., Norton, S.J., Neely, S.T. & Warr, W.B. Changes in spontaneous oto-acoustic emissions produced by acoustic stimulation of the contralateral ear. Hearing Research, 1989, 38, 229-242.

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Norton, S.J., Mott, J.B. & Champlin, C.A. Behavior of spontaneous oto-acoustic emissions following intense ipsilateral acoustic stimulation. Hearing Research, 1989, 38, 243-258.

Norton, S.J., & Rubel, E.W. Active and passive ADP components in mammalian and avian ears. In Geisler, D. et al. (Eds.) The Mechanics & Biophysics of Hearing, Springer-Verlag, New York, 219-226, 1990.

Norton, S.J., Schmidt, A.L. & Stover, L.J. Tinnitus and oto-acoustic emissions: Is there a link? Ear and Hearing, 1990, 11, 159-166.

Norton, S.J. & Widen, J.E. Evoked oto-acoustic emissions in normal hearing infants and children: Emerging data and issues. Ear and Hearing, 1990, 11, 121-127.

Norton, S.J., Bargones, J.Y. & Rubel, E.W. Development of oto-acoustic emissions in gerbil: evidence for micromechanical changes underlying development of the place code. Hearing Research, 1991, 51, 73-92.

Chang, K.W., Vohr, B.R., Norton, S.J. & Lekas, M.D. External & Middle Ear Status Related to Evoked Otoacoustic Emissions in Neonates. Archives of Otolaryngology: Head & Neck Surgery, 1993, 119(3), 276-282.

Geier, L. and Norton, S.J. The effects of limiting the number of Nucleus-22 cochlear implant electrodes programmed on speech perception. Ear and Hearing, 1992, 13: 340-348.

Norton, S.J. Cochlear Function and Oto-acoustic Emissions. Seminars in Hearing, 1992, 13, 1-14.

Mills, D.M., Norton, S.J. & Rubel, E.W. The Functioning of the Cochlear Amplifier: Vulnerability and adaptation of distortion product otoacoustic emissions to endocochlear potential. Journal of the Acoustical Society of America, 1994, 94, 2108-2122.

Norton, S.J. Applications of Transient Evoked Otoacoustic Emissions to Pediatric Population. Ear and Hearing, 1993, 14, 64-73.

Stover, L.J. & Norton, S.J. The Effects of Aging on Otoacoustic Emissions. Journal of the Acoustical Society of America, 1993, 94:5, 2670-2681.

Kokesh, J., Norton, S.J. & Duckert, L.G. The Effect of Perilymphatic Fistulas in Evoked Otoacoustic Emissions in the Guinea Pig. American Journal of Otology, 1994, 15, 1-8.

Mills, D.M., Norton, S.J. & Rubel, E.W. Development of Active and Passive Mechanics in the Mammalian Cochlea. Journal of Auditory Neuroscience. 1994, 1, 77-99.

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- Seely, D.R., Wright, A.D., Gloyd, S.S, & Norton, S.J. Hearing Loss Prevalence and Risk Factors Among a Group of Sierra Leone Children. Archives of Otolaryngology - Head & Neck Surgery. 1995, 121-853-858.
- Nelson, P.B., Nittrouer, S. & Norton S.J. "Say-Stay" Identification and psychoacoustic performance of hearing-impaired listeners. Journal of the Acoustical Society of America. 1995, 9, 1830-1838.
- Chang, K.W. & Norton, S.J. The Effects of Continuous versus Interrupted Noise Exposure on Distortion Product Otoacoustic Emissions in Guinea Pig. Hearing Research. 1996, 96, 1-12.
- Sie, K & Norton, S.J. Changes in Otoacoustic Emissions and ABR after Cis-Platinum Exposure in Gerbils. Otolaryngology - Head & Neck Surgery.1997, 116, 585-592 .
- Chang, K.W. & Norton, S.J. Efferently mediated changes in the quadratic distortion product (f2-f1). Journal of the Acoustical Society of America, 1997, 102. 1719-1733.
- Harrison, W.A. & Norton, S.J. Characteristics of Transient Evoked Otoacoustic Emissions in Normal-Hearing and Hearing-Impaired Children. Ear & Hearing, 1999, 20, 75-86.
- Arts, H.A., Norton, S.J. and Rubel, E. W The effect of Perilymphatic Tetrodotoxin on Peripheral Auditory System Function. Seminars in Hearing, 1999, 20, 3-12.
- Sie, K.C.Y., deSerres, L.M. and Norton, S.J. Age-related Sensitivity to Cisplatin Ototoxicity in Gerbils. Hearing Research, 1999, 134, 39-47.
- Norton, S.J., Gorga, M.P., Widen, J.E., Folsom, R.C., Sininger, Y., Cone-Wesson, B., Vohr, B.R. and Fletcher, K. Identification of neonatal hearing impairment: A multi-center investigation. Ear & Hearing., 2000, 21, 348-356.
- Norton, S. J., Gorga, M.P., Widen, J.E., Folsom, R., Sininger, Y.S., Cone-Wesson, B., Mascher, K., & Fletcher, K . Identification of neonatal hearing impairment: Evaluation of transient evoked otoacoustic emission, distortion product otoacoustic emission and auditory brainstem response test performance. Ear & Hearing, 2000, 21, 508-528.
- Norton, S. J., Gorga, M.P., Widen, J.E., Vohr, B., Folsom, R., Sininger, Y. S., Cone-Wesson, B. & Fletcher, K. Transient otoacoustic emissions during the perinatal period. . Ear & Hearing, 2000, 21, 425-442.
- Norton, S.J., Folsom, R.C., Widen, J.W., Vohr, B.R., Sininger, Y. S., Cone-Wesson, B. Identification of neonatal hearing impairment: Summary and recommendations. Ear & Hearing, 2000, 21, 529-535.
- Harrison, W.A., Dunnell, J.J., Fletcher, K. A., Mascher, K. E., Vohr, B.R., Gorga, M.P., Widen, J.E., Cone-Wesson, B., Folsom, R.C., Sininger, Y., and Norton, S.J. Identification of

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- neonatal hearing impairment:: Experimental protocol and database management. Ear & Hearing, 2000, 21, 357-372.
- Folsom, R. C., Widen, J. E., Vohr, B. R., Cone-Wesson, B., Gorga, M. P., Sininger, Y. S., & Norton, S. J.. Identification of Neonatal Hearing Impairment: Recruitment and follow-up. Ear & Hearing, 2000, 21, 462-470..
- Gorga, M. P., Sininger, Y. S., Cone-Wesson, B., Folsom, R. C., Vohr, B. R., Widen, J. E., & Norton, S. J. Distortion product otoacoustic emissions during the perinatal period. Ear & Hearing, 2000, 21, 400-424..
- Keefe, D. H., Folsom, R. C., Gorga, M. P., Vohr, B. R., Bulen, J. C., & Norton, S. J. Ear-canal measurements of acoustic admittance and reflectance in neonates. Ear & Hearing, 2000, 21, 443-461.
- Sininger, Y. S., Cone-Wesson, B., Folsom, R. C., Gorga, M. P., Vohr, B. R., Widen, J. E., Ekelid, M., & Norton, S. J. Auditory brainstem responses during the perinatal period. Ear & Hearing, 2000, 21, 383-399.
- Vohr, B. R., Widen, J. E., Cone-Wesson, B., Sininger, Y. S., Gorga, M. P., Folsom, R. C., & Norton, S. J. Identification of Neonatal Hearing Impairment: Characteristics of Infants in the neonatal intensive care unit (NICU) and well baby nursery. Ear & Hearing, 2000, 21, 373-382.
- Widen, J. E., Folsom, R. C., Cone-Wesson, B., Carty, L., Dunnell, J. J., Koebshell, K., Loggins, J., Mancl, L., Ohlrich, B., Trouba, S., Gorga, M. P., Sininger, Y. S., Vohr, B. R., & Norton, S. J. Hearing status at 8-12 months corrected age: Visual reinforcement audiometry protocol. Ear & Hearing, 2000, 21, 471-487.
- Cone-Wesson, B., Vohr, B. R., Sininger, Y. S., Widen, J. E., Folsom, R. C., Gorga, M. P., & Norton, S. J. Infants with Hearing Impairment. Ear & Hearing, 2000, 21, 357-372. 488-507.
- Konrad-Martin, D., Norton, S.J., Mascher, K.M. & Tempel, B.L. Effects of PMCA2 mutation on DPOAE amplitudes and latencies in deafwaddler mice. Hearing Research, 2001, 151, 205-220.
- Franck, K. & Norton, S.J. Estimation of Psychophysical Levels using the Electrically Evoked compound Action Potential Measured with Neural Response Telemetry Capabilities of Cochlear Corporation's CI24M Device. Ear & Hearing, 2001, 22, 289-299.
- Cilento, B.W., Norton, S.J. and Gates, G.A. The Effects of Aging on Distortion Product Otoacoustic Emissions. Otolaryngology HNS, 2003, 129, 382-389.

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Stern, R.E., Yueh, B., Lewis, C. Norton, S. and Sie, K.C. Recent epidemiology of pediatric cochlear implantation in the United States: disparity among children of different ethnicity and socioeconomic status. Laryngoscope. 2005 Jan;115(1):125-31.

Seixas, N.S., Goldman, D., Sheppard, L., Neitzel, R., Norton, S. and Kujawa, S.G. Prospective noise induced changes to hearing among construction industry apprentices. Occup Environ Med. 2005 May; 62(5):309-17.

Eisenberg LS, Widen JE, Yoshinaga-Itano C, Norton S, Thal D, Niparko JK, Vohr B. Current state of knowledge: implications for developmental research--key issues. Ear Hear. 2007 Dec;28(6):773-7.

Dasika VK, Werner LA, Norton SJ, Nie K, Rubinstein JT. Measuring Sound Detection and Reaction Time in Infant and Toddler Cochlear Implant Recipients Using an Observer-Based Procedure: A First Report. Ear Hear. 2009 , 30(2), 250-261.

Missono, S. Sie, K., Weiss, N., Huang, M., Boeckh, M., Norton, S., & Yueh, B. Congenital cytomegalovirus infection in pediatric hearing loss. Arch. Otolaryngol. Head & Neck Surgery, 2011, 137 (1), 47-53.

Jung, KH, Won,JH, Drennan,WR, Jameyson, E., Miyaski, G., Norton, SJ & Rubinstein, JT. Psychoacoustic performance and music and speech perception in prelingually deafened children with cochlear implants. Audiol Neurootol. 2012, 17(3), 189-197.

Iwata, AJ, Dunnell, J., Norton, SJ & Sie, KC. Prenatal diagnosis of SLC26A4 mutation and delayed onset hearing loss. Otolaryngol Head Neck Surg. 2013 Apr;148(4):705-6.

Mitchell, RM, Saltzman, BS, **Norton, SJ**, Harrison, RG, Heike, CL, Luquetti, DV, Sie, KC. Hearing loss in children with craniofacial microsomia. Cleft Palate Craniofac J. 2016.

Meredith, M, Rubinstein, J, Sie, K, **Norton, SJ**. Cochlear implantation in children with post-lingual progressive steeply sloping high-frequency hearing loss. Journal of the American Academy of Audiology. 2017.

## Book Chapters

Durlach, N.I., Reed, C.N., Braida, L.D., Schultz, M.C. & Norton, S.J. Research strategy for the study of tactile speech communication. In J.M. Pickett (Ed.), Papers from the Research Conference on Speech-Processing Aids for the Deaf. Gallaudet College, Washington, DC, 1977.

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Reed, C.M., Durlach, N.I., Braida, L.D., Norton, S.J. & Schultz, M.C. Experimental results of tadoma. In J.M. Pickett (Ed.), Papers from the Research Conference on Speech-Processing Aids for the Deaf. Gallaudet College, Washington, DC, 1977.

Norton, S.J., Mott, J.B. & Neely, S.T. Changes in spontaneous oto-acoustic emissions produced by acoustic stimulation. In Duifhuis, H., Horst, W. & Wit, H. (Eds.), Basic Issues in Hearing. Academic Press, London, 1988.

Norton, S.J. & Stover, L.J. (1994) Otoacoustic Emissions: An Emerging Clinical Tool. In Katz, J. (Ed) Handbook of Clinical Audiology, 4th edition, 1994.

Norton, S.J. and Perkins, J.O. *Early Detection and Diagnosis of Infant Hearing Impairment*. Cummings, Haugley, Thomas, Harker, Robbins, Schuller & Richardson. Otolaryngology – Head & Neck Surgery 4<sup>th</sup> Edition. Pp . 4387-4398. 2005

### **Papers/Presentations With Published Abstracts**

Reed, C.M., Durlach, N.I., Braida, L.D., Norton, S.J. & Schultz, M.C. Experimental results of tadoma. Journal of Acoustical Society of America, 1977, 63, S8.

Wier, C.C., & Norton, S.J. Frequency selectivity: a comparison of methods. Journal of Acoustical Society of America, 1979, 66, S9.

Norton, S.J. & Wier, C.C. The effects of probe duration on simultaneous-masking tuning curves. Journal of Acoustical Society of America, 1981, 69, S21.

Wier, C.C. & Norton, S.J. Psychophysical tuning curves: Stimulus ensemble and level effects. Journal of Acoustical Society of America, 1981, 69, S21.

Norton, S.J. & Wier, C.C. Relation between simultaneous-masking psychophysical tuning curves and cubic-difference-tone amplitudes for  $F_m < F_p$ . Journal of Acoustical Society of America, 1982, 71, S68.

Schlauch, R.S., Wier, C.C. & Norton, S.J. The relations among critical bands, critical ratios, and intensity difference limens in man. Journal of Acoustical Society of America, 1982, 71, S72.

Schlauch, R.S., Wier, C.C. & Norton, S.J. An objective method of effective masking calibration. Paper presented at ASHA Convention, Toronto, Canada, 1982.

Norton, S.J. & Weber, D.L. Interrelations among combination tones, combination bands and suppression. Journal of Acoustical Society of America, 1983, 73, Suppl. 1, S92.

Neely, S.T. & Norton, S.J. A mathematical model of cochlear acoustic emissions. Paper presented at the VA Conference of Cochlear Emissions, Irvin, CA. August 22, 1984.

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Mott, J.B. & Norton, S.J. TTS and psychophysical suppression effects. Journal of the Acoustical Society of America, 1985, 77, 583.

Norton, S.J. & Neely, S.T. Latency of click-evoked oto-acoustic emissions in humans. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, February 5, 1985.

Neely, S.T., Norton, S.J., Gorga, M.P. & Jesteadt, W. Latency of oto-acoustic emissions and ABR wave V using tone-burst stimuli. Journal of the Acoustical Society of America, 1986, 79, 57.

Norton, S.J., Champlin, C.A. & Mott, J.B. Effects of intense sound exposure on spontaneous oto-acoustic emissions. Journal of the Acoustical Society of America, 1986, 79, 55.

Champlin, C.A. & Norton, S.J. The effects of intense pure tones on different spontaneous oto-acoustic emissions in the same ear. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, February 1, 1987.

Keener, S.K. & Norton, S.J. Electrical bone-conduction thresholds above 8 KHz in noise-exposed listeners. American Speech-Language-Hearing Association Convention, New Orleans, November, 1987.

Mott, J.B., Norton, S.J., Neely, S.T. & Warr, W.B. Changes in spontaneous oto-acoustic emissions produced by stimulation of the contralateral ear. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, February 1, 1987.

Norton, S.J., Champlin, C.A. & Mott, J.B. The behavior of spontaneous oto-acoustic emissions from human ears following exposure to intense pure-tone stimuli. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1987.

Karlsen, E.A., Norton, S.J. & Daniels, H.A. Extracorporeal shockwave lithotripsy: is it safe for your ears. Paper presented at the American Speech-Language-Hearing Association Convention, 1988.

Nelson, P.B. & Norton, S.J. Gap detection and discrimination in complex speechlike signals. Journal of the Acoustical Society of America, 1989, 86, S122.

Norton, S.J., Bargones, J.Y. & Rubel, E.W. Development of oto-acoustic emissions in gerbils: evidence for changes in the cochlear micromechanics underlying place code changes. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1989.

Norton, S.J., Ferguson, R. & Mascher, K. Evoked oto-acoustic emissions and extratympanic cochlear microphonics recorded from human ears. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1989.

- Arts, A., Norton, S.J. and Rubel, E.W. Influence of Perilymphatic tetrodotoxin and calcium concentration on hair cell function. Paper presented at the Midwinter Meeting of the Association for Research in Otolaryngology, 1990.
- Brown, S. & Norton, S.J. The effects of contralateral acoustic stimulation on the acoustic distortion product, 2F1-F2. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1990.
- Geier, L. & Norton, S.J. Effects of limiting electrode bands on Nucleus-22 implantees' speech discrimination. Paper presented at American Speech-Language-Hearing Association. 1990.
- Nelson, P. & Norton, S.J. Glide discrimination in complex signals. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1990.
- Norton, S.J. & Hays, J. Effects of prior stimulation on oto-acoustic emissions. Poster presentation at the IVth International Conference on Effects of Noise on the Auditory System, Beaune, France, 1990.
- Norton, S.J., Tucci, D. and Rubel, E.W. Comparison of acoustic and neural responses from avian ears following gentamicin. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1990.
- Norton, S.J. & Widen, J.E. Evoked oto-acoustic emissions in infants and children. Double Mini-seminar presented at American Speech-Language-Hearing Association. 1990.
- Stover, L. & Norton, S.J. Age-associated changes in cochlear mechanics. Paper presented at the Midwinter Meeting of the Association for Research in Otolaryngology, 1990.
- Thompson, S.K., Norton, S.J. and Widen, J.E. Waardenburg Syndrome: A case of undetected hearing loss. Poster presented at American Speech-Language-Hearing Association. 1990.
- Hayes, J. & Norton, S.J. Sensitization and desensitization of evoked oto-acoustic emissions. Poster presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1991.
- Moxon, A.B., Norton, S.J., White, K. and Brehens, T. Evoked oto-acoustic emissions in neonatal screening and follow-up: clinical trials. Mini-seminar presented at the American Speech-Language-Hearing Association Convention, 1991.
- Nelson, P.B. & Norton, S.J. Relationships between psychoacoustic and speech perception performance in hearing-impaired listeners "say-stay" identification. Poster presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1991.



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- Nelson, P.B. & Norton, S.J. Relationship between psychoacoustics and "say-stay" identification in the hearing-impaired. Paper presented at the Meeting of the Acoustical Society of America, 1991.
- Rubel, E.W. & Norton, S.J. Vulnerability of oto-acoustic emissions as a function of stimulus level. Paper presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1991.
- Stover, L.J. & Norton, S.J. Comparison among different oto-acoustic emission phenomena. Paper presented at the Symposium "Oto-acoustic Emissions: Theory, Application and Techniques", 1991.
- Norton, S.J. & Harrison, W.A. Transient evoked otoacoustic emissions in normally-hearing and hearing-impaired children. Paper Presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1993.
- Mills, D.M., Rubsamen, R., Norton, S.J. & Rubel, E.W. The mammalian cochlea self-adjusts to achieve sharp tuning. Poster presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1993.
- Chang, K. & Norton, S.J., Efferent Mediated Changes in the QDT. Poster presented at the Mid-Winter Meeting of The Association for Research in Otolaryngology, 1995.
- Mills, D.M., Norton, S.J. & Rubel, E.W., Development of Active & Passive Processes in the Mammalian Cochlea. Poster presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1995.
- Norton, S.J., Physiological & Anatomical Studies of the Deafwaddler (dfw) Mutant Mouse. Poster presented at the Mid-Winter Meeting of the Association for Research in Otolaryngology, 1996.
- Chang, K. & Norton, S.J., The Efferents Play a Role in the Adaptation of the Cochlear Amplifier to Acoustic Over-Stimulation. Poster presented at the Mid-Winter Meeting of The Association for Research in Otolaryngology, 1996.
- Martin, D., Mascher, K., Temple, B.L. & Norton, S.J. Filtering of Distortion Product Otoacoustic Emissions in Normal Mice and Deaf Waddler Mouse Mutants. Poster presented at the Midwinter Meeting of the Association for Research in Otolaryngology, February, 1997.
- Franck, K. and Norton, S.J. The electrically evoked whole-nerve action potential: Fitting Applications for Cochlear Implant Users. Poster presented at the Midwinter Meeting of the Association for Research in Otolaryngology, February, 1999.

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Sie, KC.Y., deSerres, L.M. and Norton, S.J. Age-related Sensitivity to Cisplatin Ototoxicity in Gerbils. Poster presented at the Midwinter Meeting of the Association for Research in Otolaryngology, February, 1999.

Naidu, S. and Norton, S. Acquisition of auditory language skills by children with cochlear implants using Signed English. Poster presented at the 9<sup>th</sup> Symposium - Cochlear Implants in Children Meeting, 2003.

Ehrmann, E. and Norton, S. Look before you LEAP: Proactive technical assistance. Paper presented at the Annual EHDI Meeting, 2005.

Norton, S.J, Folsom, R and Ehrmann, E. Risk Factors for Progressive and Late-Onset Hearing Loss. Paper presented at NHS Meeting, 2006.

Norton, SJ. Decreases in Nucleus CI24 Patient Performance Associated With Increases In MP1 Impedance. Paper presented at the 11<sup>th</sup> International Conference on Cochlear Implants in Children. Charlotte, NC April 14-16, 2007.

Norton, SJ. Transistion from Early Intervention to Preschool: What Determines Preschool Environment for Children with Cochlear Implants? Paper presented at the 12<sup>th</sup> International Conference on Cochlear Implants in Children. Seattle, WA, June 16-19, 2009.

Norton, SJ, Bishop, R., Bourse-Archarro, T., Corkrum, K., Meredith, M. Robinson, S. & Watson, N. Communication Mode, SES and Auditory Language Development Following Cochlear Implantation. Paper presented at the 13<sup>h</sup> International Conference on Cochlear Implants in Children. Chicago, Il, July 14-1, 2011.

Meredith, M., Norton, SJ, Sie, KCY, & Rubinstein, JT, Cochlear Implantation for Children with Significant Low-Frequency Residual Hearing. Paper presented at the 13<sup>h</sup> International Conference on Cochlear Implants in Children. Chicago, Il, July 14-1, 2011.

Melick, A. & Norton, SJ, Efficacy of the Psychosocial Evaluation: 10 Year Retrospective Review. Poster presented at the 13<sup>h</sup> International Conference on Cochlear Implants in Children. Chicago, Il, July 14-1, 2011.

Meredith, M., Sie, KCY, & Rubinstein, JT, Norton, SJ, Pediatric Cochlear Implantation of Children with Steeply Sloping Hearing Loss. Poster presented at the 2013 Conference on Implantable Auditory Protheses. July 14-19, 2013. Lake Tahoe, CA

### **Invited Talks**

Norton, S.J. Cochlear Emissions. Invited paper, American Speech-Language-Hearing Association Convention, Washington, DC, November, 1985.

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- Norton, S.J. Evoked oto-acoustic emissions: A new tool for studying the effects of intense sound on the human cochlea. Invited paper presented to the National Hearing Conservation Association, 1991.
- Norton, S.J. Otoacoustic Emissions. Invited talk presented at Canadian Speech-Language & Hearing Association, 1991.
- Norton, S.J. & Widen, J.E. Oto-acoustic emissions in infants and young children. Invited paper presented at the Symposium "Oto-acoustic Emissions: Theory, Application and Techniques", 1991.
- Norton, S.J. The effects of being a newborn on otoacoustic emissions. Journal of the Acoustical Society of America, 1992, S409. (Invited Paper)
- Norton, S.J. The number and nature of OAE generators. Journal of the Acoustical Society of America, 1992, S356. (Invited paper)
- Norton, S.J. Applications of transient evoked otoacoustic emissions with pediatric populations. Invited paper, Symposium on Objective Audiometry, 1992, sponsored by CHABA.
- Norton, S.J. Basic and clinical applications of otoacoustic emissions. Invited paper. XXI International Congress of Audiology, 1992.
- Norton, S.J. Clinical Applications of Otoacoustic Emissions. Invited paper presented at British Columbia Association of Speech-Language Pathologists & Audiologist, 1992.
- Norton, S.J. Characteristics of transient evoked otoacoustic emissions in pediatric populations. Invited paper, NIH Consensus Development Conference, Early Identification of Hearing Impairment in Infants and Young Children, 1993.
- Norton, S.J. Basic and Clinical Applications of Otoacoustic Emissions. Invited paper, 1993 Conference on Developments in Pediatric Audiology: Assessment and Amplification, Boys Town National Research Hospital, 1993.
- Norton, S.J. Transient Evoked Otoacoustic Emissions on Developments in Pediatric Audiology and Amplification in Normal Hearing and Hearing Impaired Children. Invited paper, 1993 Conference on Developments in Pediatric Audiology: Assessment and Amplification, Boys Town National Research Hospital, 1993.
- Norton, S.J., Cone-Wesson, B., Folsom, R., Gorga, M., Sininger, Y., Widen, J. & Voehr, B. Unresolved Issues in Neonatal Hearing Screening. Invited paper, American Speech-Language Hearing Association Meeting, 1993.
- Norton, S.J., Clinical Applications of Otoacoustic Emissions. Invited talk presented at Ohio Speech & Hearing Association, 1993.

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Norton, S.J., Infant Screening & Pediatric Testing with Otoacoustic Emissions. Invited talk presented at American Academy of Audiology, 1994.

Norton, S.J., Clinical Applications of OAEs in Special Populations. Invited talk presented at ASHA Workshop on Integrating Physiological Measures, 1994.

Norton, S.J., Universal Neonatal Hearing Screening, Invited talk presented at Minnesota Speech & Hearing Association, 1995.

Norton, S.J., Development of the Mammalian Cochlea. Invited talk presented at the American Speech-Language & Hearing Association National Convention, 1995.

Norton, S.J. Development of Otoacoustic Emissions and Cochlear Function. Invited talk presented at the the Midwinter Meeting of the Association for Research in Otolaryngology, February, 1999.

Norton, S.J. Cochlear Implants in Children. Invited talked presented at the Alaska State Speech & Hearing Meeting, 2001.

Norton, S.J. Cochlear Implants in Children. Invited talked presented at the Washington State Speech & Hearing Meeting, 2002.

Norton, S.J. Early Hearing Loss Detection, Diagnosis and Intervention (EHDDI) in Washington. Invited talked presented at the Washington State Speech & Hearing Meeting, 2002.

Norton, S.J. Speech Understanding in Noise by Children with Cochlear Implants. Paper presented at the Conference on Implantable Auditory Prostheses. Asilomar, CA July 31 - August 4, 2005

Norton, S.J., Bishop, R., Bourse-Archarro, T., Corkrum, K., Meredith, M. Robinson, S. & Watson, N. Communication Mode, SES and Auditory Language Development Following Cochlear Implantation. Paper presented at the 13<sup>h</sup> International Conference on Cochlear Implants in Children. Chicago, Il, July 14-16, 2011.

Meredith, M., Norton, S.J., Sie, K.C.Y., & Rubinstein, J.T., Cochlear Implantation for Children with Significant Low-Frequency Residual Hearing. Paper presented at the 13<sup>h</sup> International Conference on Cochlear Implants in Children. Chicago, Il, July 14-16, 2011.

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Meredith, M., Sie, KCY, & Rubinstein, JT, Norton, SJ, Pediatric Cochlear Implantation of Children with Steeply Sloping Hearing Loss. Poster presented at the 2013 Conference on Implantable Auditory Protheses. July 14-19, 2013. Lake Tahoe, CA