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Education

1992 Ph.D., University of Washington, Speech and Hearing Sciences
1988 M.S., University of Washington, Speech and Hearing Sciences
1984 B.S., Stanford University, Biological Sciences

Positions and Employment

2013- Professor, Department of Speech, Language and Hearing Sciences, University of Colorado at Boulder.
2000-2013 Associate Professor, Department of Speech, Language and Hearing Sciences, University of Colorado at Boulder.
1992-2000 Assistant Professor, Department of Speech, Language and Hearing Sciences, University of Colorado at Boulder.
1991-1992 Contract Audiologist, Veteran's Administration Medical Center Pacific Medical Center, Seattle, WA.
1991-1992 NIH Predoctoral Trainee, Hearing Research Lab, University of Washington.
1988-1991 Research Assistant, Hearing Research Lab, University of Washington.
1987-1988 Audiologist, Seattle Veteran's Administration Medical Center.
1986-1987 Teaching Assistant, University of Washington.
1985-1986 Research Assistant, Hearing Research Lab, University of Washington.

Professional Memberships

Acoustical Society of America
American Academy of Audiology
American Speech-Language-Hearing Association
Colorado Academy of Audiology

Clinical Certifications and Licensure

Certificate of Clinical Competence-Audiology American Speech-Language-Hearing Association
Colorado State Licensure in Audiology

Editor-reviewed Publications

Arehart, K.H., Kates, J.M, and Souza, P. (2014). The role of metrics in studies of hearing and cognition. *ENT & audiology news* 23(3), 92-93.

Peer-reviewed Publications (Student authors are underlined).

- Jin, I.K., Kates, J.M., and Arehart, K.H. (2017). Sensitivity of the Speech Intelligibility Index to the assumed dynamic range. *Journal of Speech, Language, Hearing Research*, in press.
- Anderson, M.C., Arehart, K.H., & Souza, P.E. (2017). Survey of current practice in the fitting of hearing aids using advanced signal processing features for adults. *Journal of the American Academy of Audiology* in press.
- Jin, I.K., Kates, J.M., and Arehart, K.H. (2017). Does language matter when using a graphical method for calculating the Speech Intelligibility Index? *Journal of the American Academy of Audiology* 28(2), 119-126.
- Croghan, N.B.H., Swanberg, A.M., Anderson, M.C., Arehart, K.H. (2016). Chosen listening levels for music with and without the use of hearing aids. *American Journal of Audiology* 25(3), 161-166.
- Shen, J., Anderson, M.C., Arehart, K.H., and Souza, P. (2016). Using cognitive screening tests in audiology. *American Journal of Audiology*, 25(4) 319-331.
- Kates, J.M. and Arehart, K.H. (2016). The Hearing-Aid Audio Quality Index (HAAQI). *IEEE-ACM Transactions on Audio Speech and Language* 24 (2) 354-365.
- Souza, P.E., Arehart, K.H., Neher, T. (2015). Working memory and hearing aid processing: literature findings, future directions, and Clinical Applications. *Front Psychol.* 2015; 6: 1894. Published online 2015 December 16. doi: 10.3389/fpsyg.2015.01894. PMID: PMC4679849.
- Souza, P.E., Arehart, K.H., Shen, J., Anderson, M.C. and Kates, J.M. (2015). Working memory and intelligibility of hearing-aid processed speech. *Frontiers Psych.*, Vol. 6, Article 526. PMID: PMC4423473. DOI: 10.3389/fpsyg.2015.00526.
- Jin, I.K., Kates, J.M. Lee, K. and Arehart, K.H. (2015). Band importance function for Korean sentences. *Journal of the Acoustical Society of America* 138(2):938-941. doi: 10.1121/1.4927412
- Kates, J.M. & Arehart, K.H. (2015). Comparing the information conveyed by envelope modulation for speech intelligibility, speech quality, and music quality. *Journal of the Acoustical Society of America* 138, 2470-2482. <http://dx.doi.org/10.1121/1.4931899>
- Arehart, K.H. Souza, P.E., Kates, J.M., Lunner, T., and Pedersen, M.S. (2015). Relationship between distortion, hearing loss, and working memory for digital noise reduction. *Ear and Hearing* 36(5), 505-516.
- Falk, T.H., Parsa, V., Santos, J.F., Arehart, K.H., Hazrati, O., Huber, R., Kates, J.M., and Scollie, S. (2015). Objective quality and intelligibility prediction for users of assistive listening devices. *IEEE Sig. Proc. Mag.* 32(2), 114-124.
- Souza, P.E., & Arehart, K.H. (2015). Robust relationship between reading span and speech perception in noise. *International Journal of Audiology* 54(10), 705-713.
- Croghan, N.B.H., Arehart, K.H., and Kates, J.M. (2014). Music preferences with hearing aids: Effects of signal properties, compression settings, and listener characteristics. *Ear and Hearing*, 35(5), 170-184.
- Jin, I.K., Kates, J.M. and Arehart, K.H. (2014). The dynamic range for speech materials in Korean, English, and Mandarin: A cross-language comparison. *J Speech Hear. Lang. Research* 57, 2024-2030.
- Kates, J.M. and Arehart, K.H. (2014), The hearing aid speech perception index (HASPI). *Speech Communication* 65, 75-93.

- Kates, J.M., and Arehart, K.H. (2014). The Hearing-Aid Speech Quality Index (HASQI) Version 2. *Journal of the Audio Engineering Society* 62(3), 99-117.
- Arehart, K. H.; Croghan, N.B. H.; Muralimanohar, R.K. (2014). Effects of age on melody and timbre perception in simulations of electro-acoustic and cochlear-implant hearing. *Ear & Hearing* 35(2):195-202.
- Anderson, M.C., Arehart, K.H., & Kates, J.M. (2014). The effects of noise vocoding on speech quality perception. *Hearing Research* 309, 75-83.
- Kates, J.M., Arehart, K.H., & Souza, P.E. (2013). Integrating cognitive and peripheral factors in predicting hearing-aid processing effectiveness. *Journal of the Acoustical Society of America* 134(6), 4458-4469.
- Portnuff, C.D. F.; Fligor, B.J. & Arehart, K.H. (2013). New measurement techniques for portable listening devices: Technical Report *Journal of the Audio Engineering Society* 61(10) 749-754.
- Souza, P.E., Arehart, K.H., Kates, J.M., Croghan, N.B.H., and Gehani, N. (2013). Exploring the limits of frequency compression. *Journal of Speech, Language, Hearing Research* 56(5) 1349—1363.
- Arehart, K.H., Souza, P.E., Baca, R.L., & Kates, J.M. (2013). Age, hearing loss and cognition: Susceptibility to hearing aid distortion. *Ear and Hearing* 34(3), 251-260.
- Portnuff, C.D.F., Fligor, B.J. & Arehart, K.H. (2013). Self-report and long-term field measures of MP3 player use: How accurate is self-report? *International Journal of Audiology* 52, Suppl 1, S33-S40.
- Jin, I.K., Kates, J.M., & Arehart, K.H. (2012). The effect of noise envelope modulation on quality judgments of noisy speech. *Journal of the Acoustical Society of America*, 132(4), EL277-EL283.
- Croghan, N.B.H., Arehart, K.H., & Kates, J.M. (2012). Quality and loudness judgments for music subjected to compression limiting. *Journal of the Acoustical Society of America*, 132(2), 1177-1188.
- Rossi-Katz, J.A. & Arehart, K.H.(2011). Survey of audiological service provision to older adults with cochlear implants. *American Journal of Audiology*, 20(2), 84-89.
- Portnuff, C.D.F., Fligor, B., & Arehart, K.H. (2011). Teenage use of portable listening devices: A hazard to hearing? *Journal of the American Academy of Audiology*, 22(10), 663–677.
- Arehart, K.H., Kates, J.M., Anderson, M.C., & Moats, P. (2011). Determining perceived sound quality in a simulated hearing aid using the international speech test signal. *Ear and Hearing*, 32(4), 533-535.
- Arehart, K.H., Kates, J.M., & Anderson, M.C. (2011). Effects of noise, nonlinear processing, and linear filtering on perceived music quality. *International Journal of Audiology*, 50(3), 177-190.
- Arehart, K., Souza, P., Miller, C., & Muralimanohar, R.K. (2011). Effects of age on concurrent vowel perception in acoustic and simulated electro-acoustic hearing. *Journal of Speech, Language and Hearing Research*, 54(1), 190-210.
- Souza, P., Arehart, K.H., Miller, C., & Muralimanohar, R.K. (2011). Effects of age on F0-discrimination and intonation perception in acoustic and simulated electro-acoustic hearing, *Ear and Hearing*, 32(1), 75-83.
- Kates, J.M. & Arehart, K.H. (2010). Hearing Aid Speech Quality Index. *Journal of the Audio Engineering Society*, 58(5), 363-381.
- Arehart, K.H., Kates, J.M., & Anderson, M.C. (2010). Effects of noise, nonlinear processing and linear filtering on perceived speech quality. *Ear and Hearing*, 31(3), 420-436.
- Anderson, M.C., Arehart, K.H., & Kates, J.M. (2009). The acoustic and perceptual effects of series and parallel processing. *EURASIP Journal on Advances in Signal Processing*, Vol. 2009, Article ID 619805, doi:10.1155/2009/619805.
- Rossi-Katz, J. & Arehart, K.H. (2009). Message and talker identification in older adults: Effects of task, distinctiveness of the talkers' voices and meaningfulness of the competing message. *Journal of Speech, Language, Hearing Research*, 52(2), 435 - 453.

- Arehart, K.H., Kates, J.M., Anderson, M.C., & Harvey, L.O. (2007). Effects of noise and distortion on speech quality judgments in listeners with normal hearing and with hearing loss. *Journal of the Acoustical Society of America*, 122(2), 1150-1164.
- Hansen, J.H.L., Radhakrishnan, V., & Arehart, K.H. (2006). Speech enhancement based on generalized minimum mean square error estimators and masking properties of the auditory system. *IEEE Transactions on Audio, Speech, and Language Processing*, 14(6), 2049-2063.
- Rossi-Katz, J. & Arehart, K.H. (2005). Effects of cochlear hearing loss on perceptual grouping cues in competing vowel perception. *Journal of the Acoustical Society of America*, 118(4), 2588-2598.
- Kates, J.M. & Arehart, K.H. (2005). Multi-channel dynamic-range compression using digital frequency warping. *EURASIP Journal on Applied Signal Processing*, 2005(18), 3003-3014.
- Natarajan, A., Hansen, J.H.L., Arehart, K.H., & Rossi-Katz, J. (2005). An auditory masked threshold based noise suppression algorithm GMMSE-AMT[ERB] for listeners with sensorineural hearing loss. *EURASIP Journal on Applied Signal Processing*, 2005(18), 2938-2953.
- Arehart, K.H., Rossi-Katz, J., & Swensson, J. (2005). Double-vowel perception in listeners with cochlear hearing loss: Differences in fundamental frequency, ear of presentation and relative amplitude. *Journal of Speech, Language, Hearing Research*, 48(1), 236-252.
- Kates, J.M. & Arehart, K.H. (2005). Coherence and the Speech Intelligibility Index. *Journal of the Acoustical Society of America*, 117(4), 2224-2237.
- Arehart, K.H., Hansen, J.H.L., Gallant, S., & Kalstein, L. (2003). Evaluation of an auditory-masked-threshold noise suppression algorithm in normal-hearing and hearing-impaired listeners. *Speech Communication*, 40(4), 575-592.
- Stredler-Brown, A. & Arehart, K.H. (2000). Universal newborn hearing screening: Impact on early intervention services. *Volta Review*, 100(5), 85-117.
- Arehart, K.H. & Burns, E.M. (1999). A comparison of monotic and dichotic complex-tone pitch perception in listeners with hearing loss. *Journal of the Acoustical Society of America*, 106(2), 993-997.
- Arehart, K.H. & Rosengard, P.F. (1999). Psychometric functions for discrimination of two-component complex tones in listeners with normal hearing and listeners with hearing loss. *Journal of the Acoustical Society of America*, 105(4), 2454-2465.
- Arehart, K.H. & Yoshinaga-Itano, C. (1999). The role of educators in the early identification of hearing loss. *American Annals of the Deaf*, 144(1), 19-23.
- Arehart, K.H., Yoshinaga-Itano, C., Gabbard, S., Stredler-Brown, A., & Thomson, V. (1998). State of the states: Status of universal newborn hearing screening, assessment and intervention in 17 states. *American Journal of Audiology*, 7, 101-111.
- Arehart, K.H. (1998). Effects of high-frequency amplification on double-vowel perception in listeners with hearing loss. *Journal of the Acoustical Society of America*, 104(3), 1733-1736.
- Scherer, R.C., Arehart, K.H., Guo, C.G., Milstein, C.F., & Horii, Y. (1998). Just noticeable differences for glottal flow waveform characteristics. *Journal of Voice*, 12(1), 21-30.
- Arehart, K.H., King, C.A., & Mudgett, K. (1997). Role of fundamental frequency differences in the perceptual separation of competing vowel sounds by listeners with normal hearing and listeners with hearing loss. *Journal of Speech, Language, Hearing Research*, 40(6), 1434-1444.
- Arehart, K.H. (1994). Effects of harmonic content on complex-tone fundamental frequency discrimination in hearing-impaired listeners. *Journal of the Acoustical Society of America*, 95(6), 3574-3585.
- Burns, E.M., Campbell, S.L., & Arehart, K.H. (1994). Longitudinal measurements of spontaneous otoacoustic emissions in infants. *Journal of the Acoustical Society of America*, 95(1), 385-394.
- Keefe, D.H., Bulen, J.C., Arehart, K.H., & Burns, E.M. (1993). Ear canal impedance and reflection coefficient in human infants and adults. *Journal of the Acoustical Society of America*, 94(5),

2617-2638.

Burns, E. M., Arehart, K.H., & Campbell, S.L. (1992). Prevalence of spontaneous otoacoustic emissions in neonates. *Journal of the Acoustical Society of America*, 91(3), 1571-1575.

Arehart, K.H., Burns, E.M., & Schlauch, R.S. (1990). A comparison of psychometric functions for detection in normal-hearing and hearing-impaired listeners. *Journal of Speech and Hearing Research*, 33(3), 433-439.

Dobie, R.A., Hoberg, K.E., & Rees, T.S. (1986). Electrical tinnitus suppression: A double-blind crossover study. *Otolaryngology - Head and Neck Surgery*, 95,319-323.

Invited and Other Talks

Arehart, K.H., Souza, P., Kates, J.M. Quantifying the relationship between listener response and amount of hearing aid signal processing. Invited keynote speaker 4th International Conference on Cognitive Hearing Science for Communication, 18-21 June 2017. Linköping University, Sweden.

Aging, Cognition and Hearing Aids. Invited speaker for conference on Communication Problems in Older Adults. University of Cologne, Germany. November 9, 2015.

Souza P, Arehart K. (2015). Using frequency lowering: why, when, and for whom? A review of current evidence. Phonak Adult Care Conference, Phoenix, AZ

Effects of hearing aid signal processing on speech perception in older adults. Invited speaker for monthly seminar series at the National Center for Rehabilitative Auditory Research (NCRAR) of the VA Rehabilitation Research and Development (RR&D) Service. April 2011.

The role of fundamental frequency differences in competing speech perception. Invited Colloquium, University of Washington, Speech and Hearing Sciences. April 2008.

Arehart, Kathryn H. (10/24/13). Aging, Cognition and Hearing Aids. Seminar given to NIH T32 grant mentors and trainees. Department of Otolaryngology, University of Colorado Anschutz Medical Campus.

Arehart, Kathryn H. (2/28/14). Aging, Cognition and Hearing Aids. Colloquium given to Institute of Cognitive Science, University of Colorado Boulder,

Arehart, K.H. (9/19/14). Cognition and Hearing Aids. Three-hour Tier-1 workshop given at the Colorado Academy of Audiology annual conference.

Invited Book Review

Moore, Brian C. J. (2008). Cochlear Hearing Loss: Physiological, Psychological and Technical Issues, Second Edition (Wiley Series in Human Communication Science). Invited book review published in the *Journal of the Acoustical Society of America*, 124(5), 2665.

Conference Presentations

Jin, I.K., Kates, J.M., Lee, K. & Arehart, K.H. (2016). Sensitivity of the Speech Intelligibility Index to the assumed dynamic range. Poster presentation at the International Hearing Aid Research Conference, Tahoe City, CA, August 2016.

Arehart, K.H., Anderson, M.C., Muralimanohar, R.K., Kates, J.M., & Souza, K.H. (2016). Quantitative benchmarks for the evaluation of signal processing in commercial hearing devices. Poster presentation at the International Hearing Aid Research Conference, Tahoe City, CA, August 2016.

Kates, J.M., Muralimanohar, R.K., & Arehart, K.H. (2016). Improving externalization in remote microphone systems. Poster presentation at the International Hearing Aid Research Conference, Tahoe City, CA, August 2016.

Muralimanohar, R.K., Kates, J.M., Arehart, K.H. (2016). Envelope modulation and intelligibility for

- speech in a simple model of reverberation. Poster presentation at the International Hearing Aid Research Conference, Tahoe City CA, August 2016.
- Souza, P., Schoof, T., Anderson, M.C., & Arehart, K.H. (2016). Variability in hearing aid outcomes in older adults: Clinical trial design and preliminary results. Poster presentation at the International Hearing Aid Research Conference, Tahoe City, CA, August 2016.
- Shen J, Souza P, Anderson M, Arehart K, Kates J, Muralimanohar R. (2015). Can cognitive screening tests explain recognition of distorted speech? American Auditory Society, Scottsdale, AZ. March 2015.
- Kates, J.M. & Arehart, K.H. (2014). A unified approach to predicting speech intelligibility and quality. Proc. Int. Hearing Aid Research Conf 2014, Lake Tahoe, CA, Aug 13-17, 2014.
- Souza, P.E., Arehart, K.H. Shen, J., Kates, J.M., Muralimanohar, R.K. and Anderson, M.C. (2014). Individual sensitivity to distortion from combined signal processing. Proc. Int. Hearing Aid Research Conf 2012, Lake Tahoe, CA, Aug 13-17, 2014.
- Kates, J.M., Arehart, K.H., Souza, P.E., Anderson, M.C., Muralimanohar, R.K. & Portnuff, C.D. (2014). Quantifying processing interactions in hearing aids. Am. Aud. Soc. 2014 Meeting, Scottsdale, AZ, March 6-8, 2014.
- Jin, I.K., Kates, J.M., Arehart, K.H. (2014). Dynamic Range of Speech Materials in Korean, English, and Mandarin Am. Aud. Soc. 2014 Meeting, Scottsdale, AZ, March 6-8, 2014.
- Souza P., & Arehart K. (2013). The relationship between working memory and communication in noisy environments. Gerontological Society of America, New Orleans, LA. Paper presented to the Gerontological Association of America, November 20-24, 2013.
- Souza P, Arehart K, Miyake A, & Flowers S. (2013). Understanding the relationship between working memory and speech in noise. Aging and Speech Communication, Bloomington, IN. (October 6-9).
- Kates, J.M. & Arehart, K.H. (2013). SNR is not enough: Noise modulation and speech quality. Paper presented to the 38th International Conference on Acoustics, Speech and Signal Processing, Vancouver, B.C., Canada, May 29.
- Goy, H., Pichora-Fuller, M.K., Van Lieshout, P., & Arehart, K. (2013). Quality of older voices processed by hearing aids: Acoustic factors explaining inter-talker differences. Paper presented at the International Congress of Acoustics Montreal, Canada. (Proceedings of Meetings on Acoustics 19, 060133).
- Arehart, K., Souza, P., Lunner, T., Syskind Pedersen, M., & Kates, J. (2013). Relationship between distortion and working memory for digital noise-reduction processing in hearing aids Paper presented at the International Congress of Acoustics Montreal, Canada. (Proceedings of Meetings on Acoustics 19, 050084).
- Muralimanohar, R.M., Kronen, C., Arehart, K., Kates, J., & Pichora-Fuller, M.K. (2013). Quality of voices processed by hearing aids: Intra-talker differences. Paper presented at the International Congress of Acoustics Montreal, Canada. (Proceedings of Meetings on Acoustics 19, 060112).
- Arehart, K.H., Pichora-Fuller, K., Kates, J.M., et al. (2012). Do voices matter? Interactions between hearing aid signal processing and talker characteristics. Paper presented at the International Hearing Aid Conference, Tahoe City, CA.
- Croghan, N.B.H., Kates, K.H., Arehart, K.H., & Waterman, K. (2012). Quantifying the acoustic features of recorded music processed through hearing aids. Paper presented at the International Hearing Aid Conference, Tahoe City, CA.
- Portnuff, C. D. F., Fligor, B. J., & Arehart, K. H. (2012). Noise dosimetry of MP3 player use: Real-world exposure monitoring to evaluate risk? Paper presented at the Academy Research Conference, part of the AudiologyNow Conference, Boston, MA.
- Croghan, N.B.H., Arehart, K.H., & Kates J.M. (2012). Normally hearing listeners' perceptions of dynamic-range compressed music. Paper presented at the annual American Auditory Society meeting, Scottsdale, AZ.

- Portnuff, C.D.F., Fligor, B. J., & Arehart, K.H. (2012). New measurement techniques for portable listening devices: Technical report. Paper presented at the Audio Engineering Society 47th International Conference on Music Induced Hearing Disorders, Chicago, IL.
- Souza, P., Arehart, K.H., Kates, J., Croghan, N.B.H., Gehani, N., Muralimanohar, R.K., & Hoover, E. (2011). Age, hearing loss and cognition: Susceptibility to hearing aid distortion. Paper presented at the Conference on Aging and Speech Communication, Indiana University, Bloomington, IN.
- Souza, P., Arehart, K.H., Kates, J.M., Muralimanohar, R.K., Croghan, N.B.H., & Hoover, E. (2011). Effects of frequency compression on the intelligibility and quality of speech in noise. Paper presented at the 161st Meeting of the Acoustical Society of America, Seattle, WA.
- Arehart, K.H., Souza, P.E., Kates, J.M., Muralimanohar, R.K., Croghan, N.B.H., & Hoover, E. (2011). Effects of age and cognition on perception of frequency-compressed speech. Paper presented at the annual American Auditory Society meeting, Scottsdale, AZ.
- Arehart, K.H., Kates, J.M., Anderson, M.C., and Moats, P.M.K. (2010). Sound quality ratings for the International Speech Test Signal (ISTS). Paper presented at the International Hearing Aid Research Conference, Tahoe City, CA.
- Anderson, M.C., Arehart, K.H., & Kates, J.M. (2010). The role of temporal fine structure in sound quality perception. Paper presented at the International Hearing Aid Research Conference, Tahoe City, CA.
- Anderson, M.C., Arehart, K.H., Kates, J.M., & Croghan, N.B.H. (2010). Sensitivity to temporal fine structure in older adults using the TFS1 test. Paper presented at the Proc. International Hearing Aid Research Conference, Tahoe City, CA.
- Kates, J.M. & Arehart, K.H. (2010). Modeling quality judgments of music stimuli reproduced by a simulated hearing aid. Paper presented at the 159th Meeting of the Acoustical Society of America, Baltimore, MD.
- Kates, J.M. & Arehart, K.H. (2010). Modeling quality judgments of music stimuli reproduced by a simulated hearing aid. Paper presented at the 159th Meeting of the Acoustical Society of America, Baltimore, MD.
- Souza, P. & Arehart, K.H. (2010). Aging, auditory perception and hearing aids. Paper presented at the Academy Research Conference (ARC), American Academy of Audiology, San Diego, CA.
- Miller, C., Souza, P., Arehart, K.H., & Anderson, M.C. (2009). Objective and subjective speech perception in noise in older adults. Paper presented at the Conference on Aging and Speech Communication, Indiana University, Bloomington, IN.
- Rossi-Katz, J.A. & Arehart, K.H. (2009). Cochlear implantation in older adults: Standards of care. Paper presented at the Conference on Aging and Speech Communication, Indiana University, Bloomington, IN.
- Arehart, K.H., Croghan, N., Anderson, M.C., & Muralimanohar, R.K. (2009). Effects of age on melody and timbre perception in simulations of electro-acoustic and cochlear-implant hearing. Paper presented at the Conference on Aging and Speech Communication. Indiana University, Bloomington, IN.
- Arehart, K.H., Croghan, N.B.H., Anderson, M.C., & Muralimanohar, R.K. (2009). Music perception using simulated cochlear implant and electro-acoustic systems: Effects of age and processing condition. Paper presented at the Colorado Academy of Audiology, Breckenridge, CO.
- Kates, J.M. & Arehart, K.H. (2009). A speech quality metric based on a cochlear model. Paper presented at the 157th Meeting of the Acoustical Society of America, Portland, OR.
- Arehart, K.H., Kates, J.M., & Anderson, M.C. (2009). Quality judgments for music signals by normal-hearing and hearing-impaired listeners. Paper presented at the 157th Meeting of the Acoustical Society of America, Portland, OR.
- Portnuff, C.D.F., Fligor, B.J., & Arehart, K.H. (2009). Teenage use of MP3 players: A risk to hearing? Paper presented at the annual American Academy of Audiology meeting, Dallas, TX.

- Souza, P. & Arehart, K.H. (2009). Hearing aid features: Do older people need different things? In *Hearing Care for Adults 2009*. Chicago: Phonak AG. Paper presented at Hearing Care for Adults , Chicago, IL.
- Arehart, K.H., Souza, P.E., Miller, C.M., & Muralimanohar, R.K. (2008). Age-related deficits in F0 processing: Use of periodicity and fine-structure cues. Paper presented at the International Hearing Aid Research Conference, Tahoe City, CA.
- Anderson, M.C., Arehart, K.H., & Kates, J.M. (2008). Digital signal processing algorithms in hearing aids: Parallel vs. series. Paper presented at the International Hearing Aid Research Conference, Tahoe City, CA.
- Kates, J.M. & Arehart, K.H. (2008). A model of sound quality judgments. Paper presented at the International Hearing Aid Research Conference, Tahoe City, CA.
- Arehart, K.H., Kates, J.M., Anderson, M.C., & Harvey, L. (2008). Effects of linear, nonlinear and combined linear and nonlinear distortion on perceived speech quality. Paper presented at the International Hearing Aid Research Conference, Tahoe City, CA.
- Kates, J.M. & Arehart, K.H. (2008). Speech intelligibility: Audibility or envelope? Paper presented at the annual American Auditory Society meeting, Scottsdale, AZ.
- Kates, J.M. & Arehart, K.H. (2007). A time-frequency modulation model of speech quality. Paper presented at the IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Paltz, NY.
- Rossi-Katz, J. & Arehart, K.H. (2007). Intersubject variability among older adults on speech-in-noise tasks: Auditory and cognitive factors. Paper presented at the Aging and Speech Communication Research Conference, Indiana University, Bloomington, IN.
- Arehart, K.H. & Kates, J.M. (2007). Perceptual basis of speech quality judgments. Paper presented at the annual American Academy of Audiology meeting, Denver, CO.
- Campbell, J.D., Habegger, N.B., & Arehart, K.H. (2007). Temporally-based pitch perception in cochlear hearing loss. Paper presented at the annual American Academy of Audiology meeting, Denver, CO.
- Rossi-Katz, J. & Arehart, K.H. (2007). Age-related changes in competing-speech perception. Paper presented at the annual American Academy of Audiology meeting, Denver, CO.
- Kates, J.M. & Arehart, K.H. (2007). Time-frequency modulation and speech quality judgments. Paper presented at the annual American Auditory Society meeting, Scottsdale, AZ.
- Kates, J.M., Arehart, K.H., & Muralimanohar, R. (2007). Nonlinear distortion in hearing aids: Relating signal characteristics to auditory perception. Paper presented at the Association for Research in Otolaryngology, Denver, CO.
- Kates, J.M., Arehart, K.H., Harvey, L., & Anderson, M. (2006). Predictions of speech quality under conditions of noise and distortion. Paper presented at the 151st Meeting of the Acoustical Society of America, Providence, RI.
- Rossi-Katz, J. & Arehart, K.H. (2006). Effects of task complexity on perceptual organization of speech cues by older listeners. Paper presented at the 151st Meeting of the Acoustical Society of America, Providence, RI.
- Rossi-Katz, J. & Arehart, K.H. (2005). Separation of competing talkers and older listeners with and without cochlear hearing loss. Paper presented at the Aging and Speech Communication Research Conference, Indiana University, Bloomington, IN.
- Rossi-Katz, J. & Arehart, K.H. (2005). Effects of age and cochlear hearing loss on the perceptual organization of competing speech. Paper presented at the Biennial International Conference of the VA RR&D National Center for Rehabilitative Auditory Research (NCRAR) titled The Aging Auditory System: Considerations for Rehabilitation, Portland, OR.
- Zhang, X., Hansen, J.H.L., Arehart, K.H., & Rossi-Katz, J. (2004). In-vehicle based speech processing for hearing impaired subjects. Paper presented at the 8th International Conference on Spoken Language Processing, Jeju Island, Korea.
- Zhang, X., Hansen, J.H.L., & Arehart, K.H. (2004). Speech enhancement based on a combined

- multi-channel array with constrained iterative and auditory masked processing. IEEE ICASSP-2004: International Conference on Acoustics, Speech and Signal Processing vol. 1, pp. 229-232.
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Research Funding

NIH NIDCD R01 1R01DC012289-01 (Arehart PI on sub-contract; Souza PI) 04/01/12-03/31/17
Characterizing variability in hearing aid outcomes among older adults
Role: Principal Investigator on Sub-Contract to University of Colorado Boulder

GN ReSound Hearing Aid Research: Integrating Remote and Hearing-Aid Microphones in Rooms Role: Principal Investigator (in collaboration with James Kates)	01/01/2015-12/31/2018
GN ReSound Hearing Aid Research Role: Principal Investigator (in collaboration with James Kates)	09/01/05-09/01/14
CARTSS Scholar Fund Program Aging and Cochlear Implants Role: Principal Investigator	2008-2009
University of Washington Virginia Merrill Bloedel Hearing Research Center Visiting Scholar (to work with Dr. Pamela Souza) Role: Visiting Scholar	2008
CU-Boulder LEAP Program Associate Professor Growth Grant Aging and Speech Communication	2007
CU-Boulder LEAP Program Clinical Research Station for Hearing Aid Research Role: Co-Principal Investigator	2007
CU-Boulder Council on Research and Creative Work Modeling the Effects of Noise and Nonlinear Distortion on Hearing Aid Performance. Role: Principal Investigator	2006-2007
Centers for Disease Control and Prevention (CDC). UR3/CCU824219 Marion Downs International Hearing Center (PI Yoshinaga-Itano) Role: Co-Investigator (Hearing Perception and Aging)	2004-2005
Whitaker Foundation New Speech Enhancement Algorithms for Listeners with Hearing Loss Based on Studies of Speech In Noisy Environments Role: Principal Investigator	2001-2004
CU-Boulder Council on Research and Creative Work Benefits on Speech Enhancement Algorithms: Benefits for Perception of Speech in Noise by Listeners with Hearing Loss Role: Principal Investigator	2001
Burroughs Wellcome Fund Models of Auditory Perception in Listeners with Cochlear Hearing Loss Travel Grant to be Visiting Scholar at University of Cambridge	2001
Maternal Child Health Bureau Universal Newborn Hearing Screening (PI Yoshinaga-Itano) Role: Co-Investigator	1996-2000

TRW Data Sonification for Detecting and Identifying Digital Communication Signals in Low SNR Settings Role: Co-Investigator	1999-2000
National Organization of Hearing Research Benefits on Speech Enhancement Algorithms: Benefits for Perception of Speech in Noise by Listeners with Hearing Loss Role: Principal Investigator	1999
Deafness Research Foundation Perceptual Separation of Simultaneous Sounds in Listeners with Hearing Loss Role: Principal Investigator	1996-1998
CU-Boulder Junior Faculty Development Award Role: Principal Investigator	1995
Virginia Merrill Bloedel Hearing Research Center University of Washington Role: Principal Investigator	1991
Sigma Xi Grants-in-Aid of Research Role: Principal Investigator	1991

Classroom Teaching

I typically teach two courses each semester, for a total of four three-credit courses per year. The following courses are the ones I have taught on a regular basis over the past several years.

SLHS 6544 Adult Assessment. Course for first-year graduate students in Doctorate of Audiology (AUD) program. Theoretical foundations and clinical applications for hearing assessment of adults. Includes auditory disorders, pure tone audiometry, speech audiometry, physiological measures of middle ear function, and otoacoustic emissions. Students learn about auditory disorders and evidence-based practice and discuss case studies. Typical class sizes: 5 to 12 students.

SLHS 6006 Advanced Hearing Science. Average instructor rating: Course for AUD and Ph.D. students addressing physical, physiological, and psychological acoustics of both normal and impaired auditory systems. Students are introduced to critical analysis of hearing science literature and pursue projects in which they examine the scientific bases for new clinical tests. Typical class sizes: 4 to 13 students.

SLHS 3106 Hearing Science. Upper-division undergraduate course for students majoring in Speech, Language, Hearing Sciences. Focuses on the three main aspects of the hearing process: sounds in the environment (physical acoustics), sounds encoded within the auditory system (physiological acoustics), and perception of sound (psychological acoustics). Typical class sizes range from 45 to 116 students.

SLHS 2010 Science of Human Communication. Large lower-division lecture course. Discusses how human communication (the process by which a thought is transmitted from the brain of a speaker to the brain of a listener) involves a complex interaction of acoustics, anatomy, physiology, neurobiology, and psychology. This class is comprised mostly of non-majors who take the course to fulfill a portion of their natural sciences for the College of Arts and

Sciences core curriculum. Typical class sizes range from 64 to 151 students. I have also taught honors sections of this course, with class sizes ranging from 12 to 17 students.

Teaching Conference Paper

Finan, D., Arehart, K. & Gilley, P. (2009). A content and recruiting course: The science of human communication. Paper presented at the conference of the American Speech Language Hearing Association, New Orleans, November 2009.