BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Samar, Vincent J

eRA COMMONS USER NAME (agency login):

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Rochester, Rochester, NY	BA	06/73	Psychology and Linguistics
University of Rochester, Rochester, NY	MA	05/81	Psychology (Neuroscience)
University of Rochester, Rochester, NY	PHD	05/81	Psychology (Neuroscience)

A. Personal Statement

I am a cognitive neuroscientist with primary training in experimental cognitive science, neurolinguistics, and human electrophysiological brain research. I conduct both laboratory research related to neurocognitive development and public health research related to health inequities in the Deaf and Hard of Hearing (D/HH) communities. I also instruct D/HH and hearing undergraduate Psychology BS students in research methods and statistics and have sat on several masters and doctoral committees at RIT and several universities in the US, Canada, and Australia. I am currently PI on the NTID subcontract from the CDC-funded National Center for Deaf Health Research (NCDHR) at the University of Rochester, where I am a Research Committee member, collaboratively planning and conducting health survey research and randomized controlled clinical intervention trials with the D/HH community, using a community-based participatory research (CBPR) model. I am also a Co-Director of the NIH-funded RIT-RISE Program (Research Initiative for Scientific Enhancement), which trains qualified undergraduate Deaf and Hard of Hearing students to enter Ph.D. programs in Biomedical, Biobehaviorl, and Clinical Research. I consult professionally on experimental design and statistical data analysis on federally funded grants at the University of Rochester and elsewhere. For the last 38 years, I have published collaborative research in leading scientific, health, and engineering journals spanning many disciplines, including neurolinguistic and psycholinguistic science, language acquisition, speech science, audiology, neuroelectric signal processing, the neurobiology and assessment of ADHD and dyslexia in deaf adults, sign language assessment, psychometric test validation, deaf education, cultural diversity, deaf health and health literacy research, and the social determinants of health. I have had extensive editorial experience as an Action Editor for the Elsevier neuroscience journal Brain and Cognition. I also have functional sign language skills.

1. Samar, V.J. (2006, invited). Evoked Potentials. In K. Brown (Ed.) *Encyclopedia of Language and Linguistics, 2nd Edition, Vol. 4* (pp. 326-335), Oxford, England: Elsevier.
2. Samar, V. J., Parasnis, I., & Berent, G. P. (1998, invited). Learning disabilities, attention deficit disorders, and deafness. In, M. Marschark & D. Clark (Eds.), *Psychological Perspectives on Deafness, Volume 2* (pp. 199-242). Mahwah, NJ: Lawrence Erlbaum.
3. Anderson, M.L., Leigh, I.W., & Samar, V.J. (2011 invited). Intimate partner violence against deaf women: A review. *Aggression and Violent Behavior, 16,3,* 200-206
4. Parasnis, I., Samar, V. J., & Fischer, S. D. (2005) Deaf students' attitudes toward diversity, campus climate, and role models. *American Annals of the Deaf, 150*, 47-58. PubMed PMID: 15969223

B. Positions and Honors

Positions and Employment

1993 - 1994 Visiting Associate Professor, Physics Department, University of Poona, Pune, India.
1993 - 2008 Adjunct Associate Professor of Surgery, Department of Otolaryngology, University of Rochester Medical Center, Rochester, NY.
1978 - 2012 Associate Professor, Department of Research, National Technical Institute for the Deaf, Rochester Institute of Technology.
2012 - present Associate Professor, Department of Liberal Studies, National Technical Institute for the Deaf,

Rochester Institute of Technology.

2006 - present Action Editor, *Brain and Cognition* (Elsevier)

Other Experience and Professional Memberships

1999 - 2003 NTID Institutional Review Board Member (Human subjects protection)

1985 - 2006 Brain and Cognition: Editorial Board

1985 - 1990 Journal of the Academy of Rehabilatative Audiology: Editorial Board/Statistical Consultant.

1995 Journal issue editor: Samar, V.J., & Molfese, D.L. (Eds.). Contemporary trends in neurometric waveform analysis. Brain and Cognition 1995;27(3)

1999 Journal issue editor: Samar, V.J. (Ed.). Wavelet analysis of neuroelectric waveforms. Brain and Language 1999;66(1)

2006 - present Member: Association for Psychological Science

Honors and Awards

1969 - 1973 Regional Alumni Scholarship, University of Rochester

1971 National Science Foundation Undergraduate Summer Research Fellowship, University of Rochester

1973 - 1977 NIMH Traineeship, University of Rochester

1989 Scientific Achievement Award - Joint Department Recipient, National Council on Communicative Disorders

2008 Buros Distinguished Reviewer Award, Buros Institute of Mental Measurements

2016 NTID Tenured Scholarship Award

C. Contributions to Science

a. **Social Determinants of Physical and Neurocognitive Health.** My primary laboratory research focuses on influences of early-life adversity on dysregulation of adult weight control and frontal lobe self-control systems. Early life adversity initially restricts growth and then alters the body's metabolism through complex epigenetic and metabolic pathways that trigger compensatory catch-up growth to promote survival. A consequence of catch-up growth is childhood and adult obesity due to increased metabolic efficiency (thrifty phenotype). Some researchers have sought adult anthropometric biomarkers of early-life exposure to adversity to study how early adversity affects adult health, with little success. We have recently found a biomarker that reflects individual differences in adult weight dysregulation related to individual differences in early-life growth dysregulation. In three independent studies, we discovered that gender-standardized sitting height (trunk-length) positively correlates with increased BMI in adult samples drawn from populations exposed to early-life adverse events, but not in samples from low-exposure populations (Samar, Segalowitz, Desjardins, Barnett, & Sutter, 2015). Our results suggest that gender-standardized sitting height is a simple anthropometric adult biomarker of the severity of childhood metabolic energy dysregulation that promotes adult obesity through rapid catch-up growth. Additional results from an NCDHR randomized controlled healthy eating program clinical trial (Deaf Weight Wise, DWW) of 104 overweight and obese D/HH adults ages 40-70 tend to confirm the scientific value of sitting height as a biomarker for early-life adversity (Samar, Barnett, & Sutter, 2016). Our use of the sitting height biomarker allowed us to conclude that metabolic dysregulation due to exposure to early life adversity may significantly restrict the success of an individual in a voluntary weight loss program decades after childhood. Using dense-array EEG neural imaging techniques (Samar, Segalowitz, & Desjardins, 2014; 2015), we also found that taller sitting height specifically in groups exposed to early-life adversity correlated with impaired activation of fronto-central inhibitory self control centers. Generally, our work offers scientists a unique anthropometric biomarker to study the impact of early-life adversity on many later-life health outcomes, such as diabetes, cancer, and heart disease, even when specific records of early-life adversity are unavailable.

b. Samar, V.J., Segalowitz, S.J., Desjardins, J., Barnett, S., & Sutter, E. (2015, December). Sitting height: A proposed adult marker for childhood physical and neurocognitive growth dysregulation in populations exposed to early adverse events. UNYTE Scientific Session–Transforming Population Health Research: Advances, New Methods, and Community Partnerships, University of Rochester, Rochester, NY

c. Samar, V.J., Barnett, S., & Sutter E. (2016, April). Low Childhood SES and Life-Style Obesity Intervention Efficacy with Deaf Adults Ages 40-70 Years, 2nd Annual Rochester Global Health Symposium.

d. Samar, V.J., Segalowitz, S.J., Desjardins, J. (2014, May). Adverse childhood conditions may impair adults' cortical attention mechanisms: ERP Evidence. *26th Annual Association for Psychological Science Convention*, Washington, DC, May 23-26.

e. Samar, V.J., Segalowitz, S.J., & Desjardins, J. (2015, May). Adverse childhood events dysregulate adult mediofrontal self-regulation mechanisms: Evidence from deaf adults. *27th Annual Association for Psychological Science Convention*, New York, NY

2. **Deaf Health Research.** My public health research focuses on health disparities and health literacy of the D/HH community. As a member of the NCDHR Research Committee, I led a team of NCDHR researchers, community members, and RIT computer science faculty to create the first sign-language accessible touch-screen survey tool to collect health data from the D/HH community (Samar, Barnett, Oyzon, Mowl, & Sutter, 2012). By 2008, NCDHR used this interface to create a sign language version of the CDCs Behavioral Risk Factor Surveillance System and administered it to the D/HH community in the Rochester metropolitan statistical area. Consequently, NCDHR identified several D/HH community health inequities, including high rates of obesity, intimate partner violence (IPV), and suicide bahaviors (Barnett, et al. 2011). The D/HH community used these results to set priorities for further research and intervention. NCDHR obtained additional grants to address each of these health inequities, including the Deaf Weight Wise randomized controlled clinical intervention trials for healthy living and weight control. I also collaborated with Dr. Scott Smith to create sign-language accessible survey tools to study the functional, interactive, and critical health literacy and cardiovascular knowledge of D/HH adolescents. Our study (Smith & Samar, 2016) provides the first quantitative analysis of disparities in health literacy and knowledge between D/HH and hearing adolescents, and identifies some underlying factors that may explain these disparities. Some of my undergraduate students have conducted follow-up health literacy studies of D/HH young adults, using the methods we developed, and their work was presented in April 2016 at the Pacific Rim International Conference on Disability and Diversity.

   a. Samar, V.J., Barnett, S., Oyzon, E., Mowl, C., and Sutter, E. (2012). Modality-Independent Survey Tool: Imagine the potential. *NTID Research Bulletin. 15, 1, 1-5.*
   b. Barnett, S., Klein, J.D., Pollard, R.Q., Samar, V., Schlehofer, D., Starr, M., Sutter. E., Yang, H., Pearson, T.A. (2011). Community participatory research with deaf sign language users to identify health inequities. American Journal of Public Health, 101, 2235-2238. Epub 2011 Oct 20. Abstract, ASL Video
   c. Smith, S., & Samar, V.J. (2016). Dimensions of deaf/hard-of-hearing and hearing adolescents' health literacy and health knowledge, *Journal of Health Communication.* DOI: 10.1080/10810730.2016.1179368

3. **Advanced Neuroelectric Analysis Methods.** In the 1990s I played a lead role in introducing the neuroscience community to wavelet analysis, a time-frequency signal processing tool for analyzing time-varying waveforms. Although wavelet analysis was largely confined to engineering problems at that time, I foresaw the use of wavelets as customizable "mathematical microscopes" to identify distinct neurobiologically meaningful components in EEG signals, and to improve neuroelectric imaging techniques. To introduce wavelet analysis to neuroscientists who were not engineers, I translated this mathematically dense analysis system into two non-mathematical tutorials. These seminal articles (Samar, Swartz, & Raghuveer, 1995; Samar, Bopardikar, Raghuveer, & Swartz, 1999) presented the theoretical rationale for applying wavelets to neuroelectric signal analysis. Since the time our articles were published, many hundreds of articles on using wavelets to analyze neuroelectric and other biological signals have appeared in the literature, a great many of which cite our two seminal tutorials as well as other more technical articles on wavelets I have published with colleagues. My work continues to inspire scientists to create advanced wavelet tools for specific neuroanalysis applications and to foster international collaborations in this area (Aniyan, Philip, Samar, Desjardins, Segalowitz, 2014). Today, wavelets are widely used for EEG imaging and component extraction, and wavelet tools are included in industry-standard EEG acquisition and analysis systems (e.g., Electrical Geodesics Incorporated).

   a. Samar, V. J., Swartz, K. P., & Raghuveer, M. R. (1995). Multiresolution analysis of event-related potentials by wavelet decomposition. In V. J. Samar and D. L. Molfese (Eds.), *Contemporary trends in neurometric waveform analysis, Brain and Cognition, 27, 3,* 398-438.
   b. Samar, V.J., Bopardikar, A., Raghuveer, M.R., & Swartz, K.P. (1999). Wavelet analysis of neuroelectric waveforms: A conceptual tutorial. In V. J. Samar (Ed), *Wavelet analysis of neuroelectric waveforms, Brain and Language, 66*, 7-60.
   c. Samar, V. J., Begleiter, H., Chapa, J. O., Raghuveer, M. R., Orlando, M., & Chorlian, D. (1996). Matched Meyer neural wavelets for clinical and experimental analysis of auditory and visual evoked potentials. G Ramponi, G. L. Sicuranza, S. Carrato, S. Marsi (Eds.), *Signal Processing VIII*, *Proceedings of EUSIPCO-96.* (pp. 387-390). ISBN 88-86179-83-9. Trieste: Edizioni LINT.
   d. Aniyan A.K., Philip, N.S., Samar, V.J., Desjardins, J.A., Segalowitz, S.J. (2014). A Wavelet Based Algorithm for the Identification of Oscillatory Event-Related Potential Components, *Journal of Neuroscience Methods, 233*, 63–72.

a. **Reorganization of Attentional Systems by Altered Sensory Input.** We published one of the first studies to demonstrate that D/HH young adults process Information in the visual periphery better than hearing young adults (Parasnis & Samar, 1985). This seminal finding motivated many later behavioral and neural imaging studies of neuroplastic reorganization of visual attentional systems due to auditory input restriction during early life, and continues to be widely cited in theoretical and empirical articles by other major researchers in this area. In later studies (Parasnis, Samar, Bettger, & Sathe, 1996; Parasnis, Samar, & Berent, 2003), we helped define the scope and causes of early deafness-related visual system reorganization, and our work and others' led to the primary hypothesis that auditory deprivation causes attentional resources to be adaptively redistributed away from central vision and toward the periphery, resulting in a shallower gradient of attention. In 2016, I collaborated with an undergraduate D/HH Psychology student, Lauren Berger, as part of her senior capstone research project, to directly test this hypothesis, and to study the effect of age of cochlear implantation on the development of the gradient of attention. The results of that work suggest that a revision of the gradient hypothesis is necessary.

b. Parasnis, I. & Samar, V. J. (1985). Parafoveal attention in congenitally deaf and hearing young adults. *Brain and Cognition*, *4*, 313-327.

c. Parasnis, I. Samar, V. J., Bettger, J., & Sathe, K. (1996). Does deafness lead to enhancement of visual spatial cognition in children? Negative evidence from deaf non-signers. *Journal of Deaf Studies and Deaf Education, 1,* 145-152.

d. Parasnis, I. Samar, V. J., & Berent, G.P. (2003). Deaf adults without attention deficit hyperactivity disorder display reduced perceptual sensitivity and elevated impulsivity on the Test of Variables of Attention (T.O.V.A). *Journal of Speech Language and Hearing Research, 46, 5*, 1166-183.

e. Samar, V. J., & Berger, L. (2017). Does a Flatter General Gradient of Visual Attention Explain Peripheral Advantages and Central Deficits in Deaf Adults?. *Frontiers in psychology*, *8*, 713.

4. **Neurobiology and Assessment of Developental Disabilities in D/HH Adults.** We provided the first neurobiological evidence for hidden dyslexia in D/HH young adults (Samar, Parasnis, & Berent, 2002; Samar & Parasnis, 2005). We also developed and valildated the first sign-language based computer instrument for research and diagnosis of ADHD in Deaf Adults (Parasnis, Berent, Samar, Triolo, & Murphy, 2008), and we recently demonstrated that the BRIEF-A, a widely used test for identifying executive function disorders like ADHD in hearing adults, is psychometrically valid for research and assessment with D/HH college adults (Hauser, Lukomski, & Samar, 2013). Other authors have cited our work as providing evidence-based justification for changing state and local school district disability policies that interpret the Individuals With Disabilities Education Act Amendments of 2004 as excluding the classification of a deaf child as having a learning disability or ADHD.

   a. Samar, V. J., Parasnis, I., & Berent, G. P. (2002). Deaf poor readers' pattern reversal visual evoked potentials suggest magnocellular system deficits: Implications for diagnostic neuroimaging of dyslexia in deaf individuals. *Brain and Language, 80*, 21-44.
   b. Samar, V.J., & Parasnis, I. (2005). Dorsal stream deficits suggest hidden dyslexia among deaf poor readers: Correlated evidence from reduced perceptual speed and elevated coherent motion detection thresholds. *Brain and Cognition, 58*, 300-311.
   c. Parasnis, I., Berent, G. P., Samar, V. J., Triolo, S., & Murphy, K. (2008). *Attention Deficit Scales for Adults - Sign Language Version (ADSA-SLV): A diagnostic tool for assessing ADHD in deaf and hard-of-hearing Adults.* Rochester, NY: Rochester Institute of Technology.
   d. Hauser, P. Lukomski, J., & Samar, V.J. (2013). Reliability and validity of the BRIEF-A for assessing deaf college students' executive function, *Journal of Psychoeducational Assessment, 31*, 363-374.

5. **Psycholinguistic and Neurolinguistic Studies and Language Assessment.** I have a long history of psycholinguistic, neurolinguistic, and applied language assessment research using behavioral, psychophysical, and neuroelectric imaging techniques.
   a. Samar, V. J. & Berent, G. P. (1986). The syntactic priming effect: Evoked response evidence for a pre-lexical locus. *Brain and Language*, 28, 250-272.
   b. Berent, G. P. & Samar, V. J. (1990). The psychological reality of the subset principle: Evidence from the governing categories of prelingually deaf adults. *Language*, *66*, 714-741.
   c. Samar, V. J. & Berent, G. P. (1991). Be is a raising verb: Psycholinguistic evidence. *Journal of Psycholinguistic Research*, *20*, 419-443.

d. Samar, V. J., & Parasnis, I. (2007). Cortical locus of coherent motion deficits in deaf poor readers, *Brain and Cognition, 63*, 226—239.
e. Bochner, J. H., Samar, V. J., Hauser, P.C., Garrison, W. M., Searls, J. M., & Sanders, C. A. (2016). Validity of the American Sign Language Discrimination Test, *Language Testing, 33*(4), 473-495.

D. Research Support

Current Research Support

Ongoing Research Support:

NIH-RGM122672A Smith(PI)
NIH
RIT-RISE Scientists-in-Training Program for Deaf and Hard-of-Hearing Undergraduates
RIT-RISE is a 5 year NIH training grant to prepare qualified undergraduate deaf and hard of hearing students to pursue graduate Ph.D. work in biomedical, behavioral, and clinical research fields. My responsibilities include overseeing behavioral science-related aspects of the RIT-RISE program and leading the Research Training Team charged with overseeing a sequence of mentored research experiences for Deaf and Hard of Hearing RISE Scholars.
Role: Co-Director

5U48 DP001910-04 Pearson (PI) 10/01/14-09/30/19
Centers for Disease Control (CDC)
Subcontract to NTID
Responsibilities include collaborative research to develop culturally valid health survey instruments and to promote health and health literacy within D/HOH populations.
Role: Subcontract Co-PI

Completed Research Support

5K01HL103173-02 Smith (PI) 11/01/14-6/31/15
NIH/NHLBI
Assessing Cardiovascular Risks in Deaf Adolescents Who Use Sign Language
Subcontract to NTID for *Young People's Cardiovascular Health Literacy Survey – Analysis, Dissemination, and Interface Refinement*
Responsibilities include analysis and dissemination of results and oversight of further programming efforts to refine the computerized sign language survey interface for further data collection.
Role: Subcontract PI

5U48 DP001910-04 Pearson (PI) 10/01/09-09/30/14
Centers for Disease Control (CDC)
Subcontract to NTID
Rochester Prevention Research Center- National Center for Deaf Health Research (NCDHR)
Responsibilities included collaborative research to develop culturally valid health survey instruments and to promote health and health literacy within D/HOH populations.
Role: Subcontract Co-PI

5K01HL103173-02 Smith (PI) 10/01/13-6/31/14
NIH/NHLBI
Assessing Cardiovascular Risks in Deaf Adolescents Who Use Sign Language
Subcontract to NTID for *Young Peoples Cardiovascular Health Literacy Survey – Spoken Language Version*
Responsibilities included production of sign language translations and video studio materials for survey measures, and data management.
Role: Subcontract PI