BIOGRAPHICAL SKETCH

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NAME: Julius Fridriksson

eRA COMMONS USER NAME (credential, e.g., agency login): jfridriksson

POSITION TITLE: Vice President for Research, University of South Carolina; SC SmartState Endowed Chair; Director, Center for the Study of Aphasia Recovery (C-STAR); Co-Director, McCausland Center for Brain Imaging

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Central Florida	B.A.	1995	Comm. Disorders
University of Central Florida	M.A.	1997	Speech & Hearing Sci.
University of Arizona	Ph.D.	2001	Speech & Hearing Sci.

A. Personal Statement

As a speech-language pathologist and researcher, I have dedicated my career to advancing our understanding of aphasia, with a particular focus on recovery mechanisms and innovative treatments. Over the past two decades, my laboratory has made significant contributions to the field, publishing over 230 peer-reviewed articles, mostly on aphasia treatment and the neuroplasticity associated with recovery. My research portfolio includes work in several different areas related to aphasia, including neurostimulation as an adjuvant to traditional aphasia therapy, culminating in a successful phase II randomized controlled trial. As the SmartState Endowed Chair in Memory and Brain Function and Director of the Center for the Study of Aphasia Recovery (C-STAR), I have demonstrated my ability to lead large-scale, multi-institutional research initiatives. My experience in managing a productive research lab and coordinating diverse teams of investigators, both at the University of South Carolina and other institutions, uniquely positions me to oversee this complex, multi-faceted project. Furthermore, my role as Vice President for Research at the University of South Carolina has honed my skills in research administration and strategic planning. This experience, combined with my scientific expertise, ensures that I can effectively manage all aspects of this project, from conceptualization to implementation and dissemination of results. With over $50 million in competitive research funding as a principal investigator, including the current NIH P50 grant, I have a proven track record of securing and managing large-scale federal grants. This experience, coupled with my deep understanding of aphasia and innovative approaches to its treatment, makes me well-equipped to lead this ambitious research program. I am confident in my ability to execute this project successfully in collaboration with my esteemed co-investigators. This project could potentially transform our approach to aphasia treatment and significantly improve outcomes for individuals affected by this challenging condition.

Selected publications not listed under section C (total publications = 230+).

1. **Fridriksson**, J., Elm, J., Stark, B. C., Basilakos, A., Rorden, C., Sen, S., George, M. S., Gottfried, M., & Bonilha, L. (2018). BDNF genotype and tDCS interaction in aphasia treatment. *Brain Stimul., 11(6),* 1276 – 1281.

2. **Fridriksson**, J., den Ouden, D.B., Hillis, A.E., Hickok, G., Rorden, C., Basilakos, A., Yourganov, G., & Bonilha, L. (2018). Anatomy of aphasia revisited. *Brain, 141(3),* 848 – 862.
3. Hillis, A.E., Beh, Y.Y., Sebastian, R., Breining, B., Tippett, D.C., Wright, A., Saxena, S., Rorden, C. Bonilha, L., Basilakos, A., Yourganov, G., & **Fridriksson**, J. (2018). Predicting recovery in acute poststroke aphasia. *Ann Neurol., 83(3),* 612 – 622.

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2022-	Vice President of Research, University of South Carolina
2021-2022	Vice President of Research (Interim), University of South Carolina
2016-	SmartBrain Endowed Chair, SmartState, Department of Communication Sciences and Disorders, University of South Carolina
2016-	Director, Center for the Study of Aphasia Recovery (C-STAR), Arnold School of Public Health, University of South Carolina
2012-2017	UofSC Health Sciences Distinguished Professor, Department of Communication Sciences and Disorders, University of South Carolina
2012-	Co-Director, McCausland Center for Brain Imaging, Department of Psychology, University of South Carolina
2011-	Professor, Department of Communication Sciences and Disorders, University of South Carolina
2007-2011	Associate Professor, Department of Communication Sciences and Disorders, University of South Carolina
2001-2007	Assistant Professor, Department of Communication Sciences and Disorders, University of South Carolina
2001-	Adjunct Professor, Department of Neurology, School of Medicine, University of South Carolina
1998-2001	Research Fellow, Department of Speech and Hearing Sciences, University of Arizona

Other Experience and Professional Memberships

American Association for the Advancement of Science
American Speech and Hearing Association
Organization for Human Brain Mapping
Society for Neuroscience
Society for the Neurobiology of Language

Honors

2018	Southeastern Conference (SEC) Faculty Achievement Award University of South Carolina
2016	Researcher of the Year Award Arnold School of Public Health, University of South Carolina (2nd time awardee)
2013	Professional Achievement Award College of Health and Public Affairs, University of Central Florida
2013	Outstanding Alumni Award Department of Communication Sciences and Disorders, University of Central Florida
2011	Louis M. DiCarlo Award for Clinical Advancement American Speech and Hearing Foundation
2011	Distinguished Alumnus Award Department of Speech and Hearing Sciences, University of Arizona
2011	Louis M. DiCarlo Award for Clinical Advancement South Carolina Speech-Language and Hearing Association (SCSHA)
2010	Researcher of the Year Award Arnold School of Public Health, University of South Carolina
1998-2001	Research Fellowship National Center for Neurological Communication Disorders
1995	Graduated Cum Laude (B.A.), University of Central Florida

C. Contributions to Science

1. Functional brain changes associated with treated aphasia recovery

The relationship between aphasia recovery and cortical compensation has been debated for well over a century in the scientific literature. Although considerable work has been devoted to spontaneous recovery from aphasia, somewhat less is known about functional brain changes associated with treated recovery. My lab has completed several studies demonstrating that treated improvements in naming among aphasic patients are primarily associated with functional brain changes in the residual left hemisphere. Much like several other labs, my initial work in this area included single case studies. The problem with such studies, however, is that it is difficult to decipher whether changes in cortical activation before and after treatment reflect actual improvements in language or some other processes not associated with recovery. Relying on relatively large patient samples, our more recent studies demonstrated a strong link between treatment-related improvements in naming and functional brain changes in peri-lesional cortex. Since our initial publication in 2010 (Fridriksson, 2010, *J Neurosci*), many other studies have been published that support our findings. Our work is important for two reasons: 1. It demonstrates that plastic changes in the left hemisphere drive treated recovery from aphasia, at least as it relates to improvements in naming; 2. It provides targets for electrical brain stimulation that can be used to further enhance brain activity during aphasia treatment.

a. **Fridriksson**, J., Morrow, K.L., Moser, D., Fridriksson, A., & Baylis, G.C. (2006). Neural recruitment associated with anomia treatment in aphasia. *NeuroImage, 32(3),* 1403-1412. PMID: 16766207.
b. **Fridriksson**, J., Bonilha, L., Baker, J.M., Moser, D., *&* Rorden, C. (2010). Activity in preserved left hemisphere regions predicts anomia severity in aphasia. *Cerebral Cortex*, *20(5),* 1013-9. PMID: 19687294.
c. **Fridriksson**, J. (2010). Preservation and modulation of specific left hemisphere regions is vital for treated recovery from anomia in stroke. *The Journal of Neuroscience, 30*(35), 11558-11564. PMID: 20810877.
d. **Fridriksson,** J. Richardson, J., Fillmore, P., & Cai, B. (2012). Left hemisphere plasticity and aphasia recovery. *Neuroimage, 60(2),* 854-863. PMID: 22227052.

2. Low current electrical brain stimulation to treat aphasia

Since the late 1990s, the interest in low current electrical brain stimulation as a method to study normal and disordered function has increased almost exponentially (as evidenced by a parallel increase in peer reviewed publications in this area). Much of this work has centered on transcranial direct current stimulation (tDCS), a method that has gained considerable traction in the rehabilitation literature. We published one of the first studies coupling anodal tDCS (A-tDCS) with aphasia rehabilitation and showed that A-tDCS targeting residual left hemisphere language cortex improves aphasia treatment outcome compared to sham tDCS. In just over a decade, this study has garnered over 600 citations. In a follow-up study, we further demonstrated the effect of A-tDCS on treated improvements in naming in aphasic patients. This latter study revealed a strong effect of A-tDCS on naming reaction time and that this effect was maintained at 3-weeks after treatment completion. In addition to demonstrating the benefits of A-tDCS during aphasia treatment, we completed two studies that modeled the effects of brain damage on current flow in tDCS. These studies are especially important for future work using tDCS in stroke studies as they emphasize the importance of avoiding electrode placement on the scalp directly over lesioned tissue. Building upon these prior studies, we also recently completed a phase II randomized non-inferiority trial of A-tDCS plus aphasia therapy and discovered that A-tDCS was non-inferior to sham treatment. This work lays the foundation for a larger phase III clinical trial which can more directly examine if A-tDCS is superior to sham as well as what patient factors influence outcome.

a. Baker, J., Rorden, C., & **Fridriksson**, J. (2010). Using transcranial direct current stimulation (tDCS) to treat stroke patients with aphasia. *Stroke, 41(6),* 1229-36. PMID: 20395612.
b. **Fridriksson**, J. (2011). Measuring and inducing brain plasticity in chronic aphasia. *J Comm Dis., 44*(5), 557-63. PMID: 21620414.
c. **Fridriksson**, J., Richardson, J.D., Baker, J.M., & Rorden, C. (2011). Transcranial direct current stimulation improves naming reaction time in fluent aphasia: A double-blind, sham-controlled study. *Stroke, 42*(3), 819-21. PMID: 21233468.
d. **Fridriksson**, J., Rorden, C., Elm, J., Sen, S., George, M.S., & Bonilha, L. (2018). Transcranial direct current stimulation vs sham stimulation to treat aphasia after stroke: A randomized clinical trial. *Jama Neurol., 75(12),* 1470 – 1476.

3. Brain damage associated with impaired speech production

Since Broca's initial studies on brain lesions that give rise to impaired speech production, much controversy has focused on both the nature of speech impairments caused by focal lesions as well as the specific locations of these lesions. Understanding how speech is organized in the brain has clear theoretical and clinical implications. Contemporary models of speech processing rely heavily on lesion studies and lesion analyses are important for sorting out diagnosis of speech impairment. Our studies revealed damage that causes apraxia of speech (AOS) is primarily localized to the premotor and primary motor cortex. As importantly, our findings showed far less reliance of speech production on previously implicated areas such as the left anterior insula. Our results further bolster the claim that the premotor cortex is particularly important for motor speech planning and programming.

a. Bonilha, L. & **Fridriksson**, J. (2009). Subcortical damage and white matter disconnection associated with non-fluent speech. *Brain, 132(Pt. 6),* e108. PMID: 18723562
b. **Fridriksson**, J., Fillmore, P., Guo, D., Rorden, C. (2015). Chronic Broca's aphasia is caused by damage to Broca's and Wernicke's areas. *Cerebral Cortex, 25(12),* 4689-96. PMID: 25016386
c. Basilakos, A., Rorden, C., Bonilha, L., Moser, D., & **Fridriksson**, J. (2015). Patterns of Poststroke Brain Damage that Predict Speech Production Errors in Apraxia of Speech and Aphasia Dissociate. *Stroke, 46(6),* 1561-6. PMID: 25908457.
d. **Fridriksson**, J., Yourganov, G., Bonilha, L., Basilakos, A., den Ouden, D.B., & Rorden, C. (2016). Revealing the Dual Streams of Speech Processing. *Proceedings of the National Academy of Sciences, 113(52),* 15108-15113.

Complete List of Published Work in MyBibliography:

http://www.ncbi.nlm.nih.gov/sites/myncbi/julius.fridriksson.1/bibliograpahy/41158339/public/?sort=date&direction=ascending