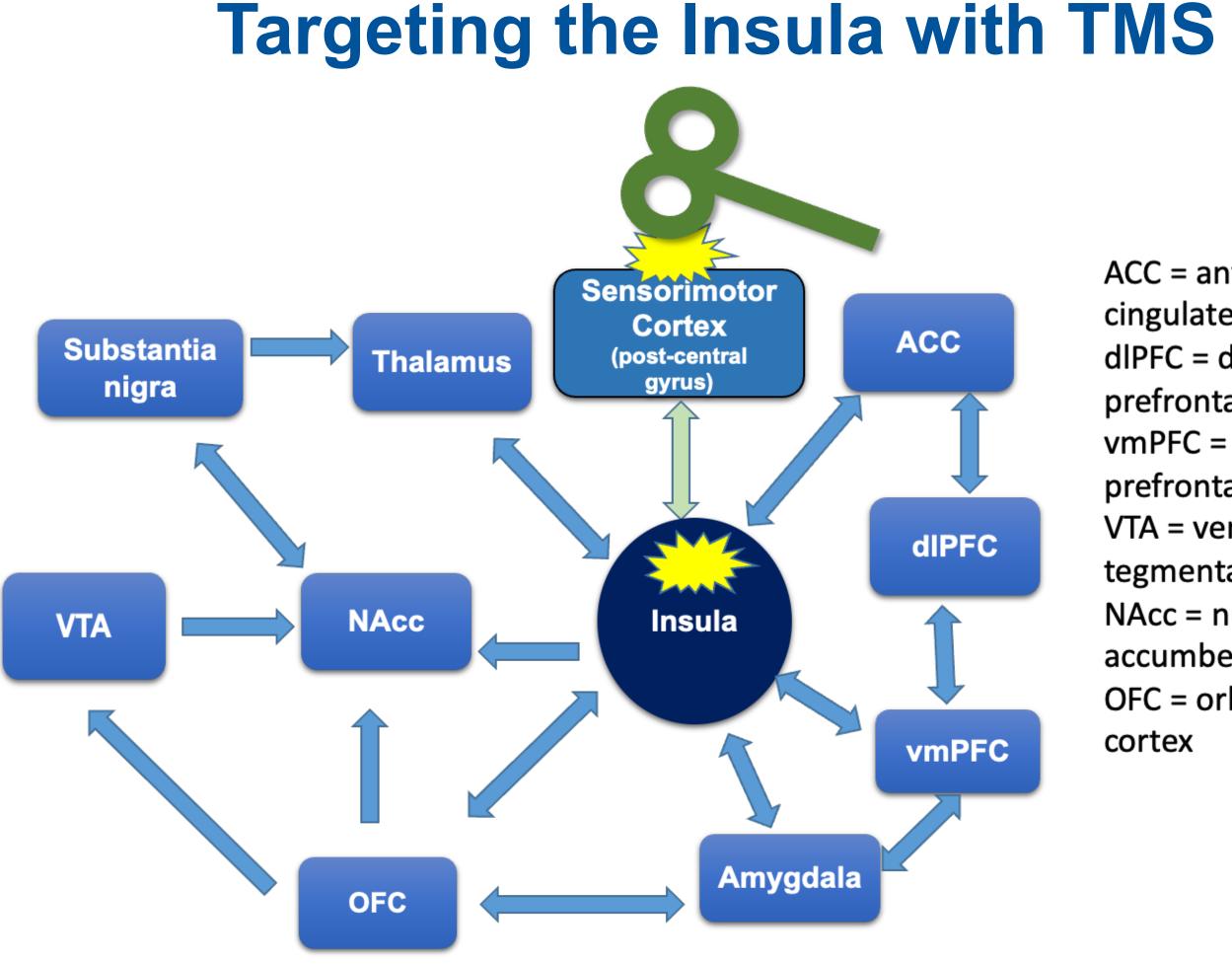
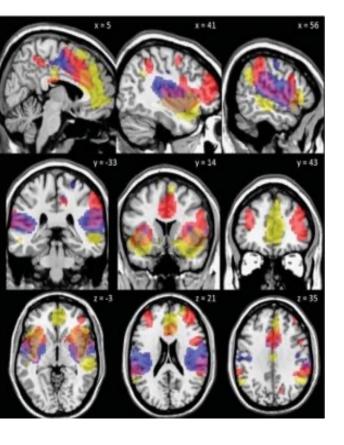
Duke Ser Bass Connections

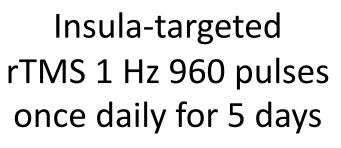
TMS-STOP Study: Background

- Smoking is leading cause of preventable disease, disability & death
- Tobacco use disproportionately affects Veterans with PTSD
- 3X more likely to smoke
- Decreased odds of successful quitting
- 12-month bio-verified cessation only 4.5-8%
- 60-70% of Veterans who smoke express interest in cessation
- Transcranial magnetic stimulation (TMS) is an innovate, noninvasive intervention for brain stimulation FDA approved for depression, OCD, and smoking cessation
- Since the brain is an electrochemical organ, electrical fields can be applied to the brain to modulate neural activity
- TMS creates a rapid fluxing magnetic field, leading to neuronal depolarization inducing neural circuitry changes

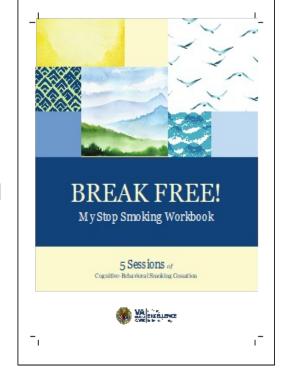








Methods



CBT once weekly for 5

weeks



Nicotine Replacement Therapy

(patch + gum/lozenge)

Participants were recruited from the Durham VA Health Care System. Eligibility included: US veterans aged 18-55, smoking 10+ cigarettes/day, with PTSD diagnosis

Noninvasive Neuromodulation for Addiction

Euajae Lee¹, Dana Rubenstein³, Aliyah Watson¹, Suzanna Thompson¹, Sonya Eason¹, Kunyu Du¹, Caroline Yoon¹, Dani Castillo¹, Anna Grace Greenho⁴, Catie Fristoe¹, Eunice Lee¹

Faculty Leads: Jonathan Young^{1,2}, Carri Polick^{1,2}, Jean Beckham¹, Trevor Drummond

¹Duke University, ²Durham VA, ³Duke University School of Medicine, ⁴Duke University School of Nursing

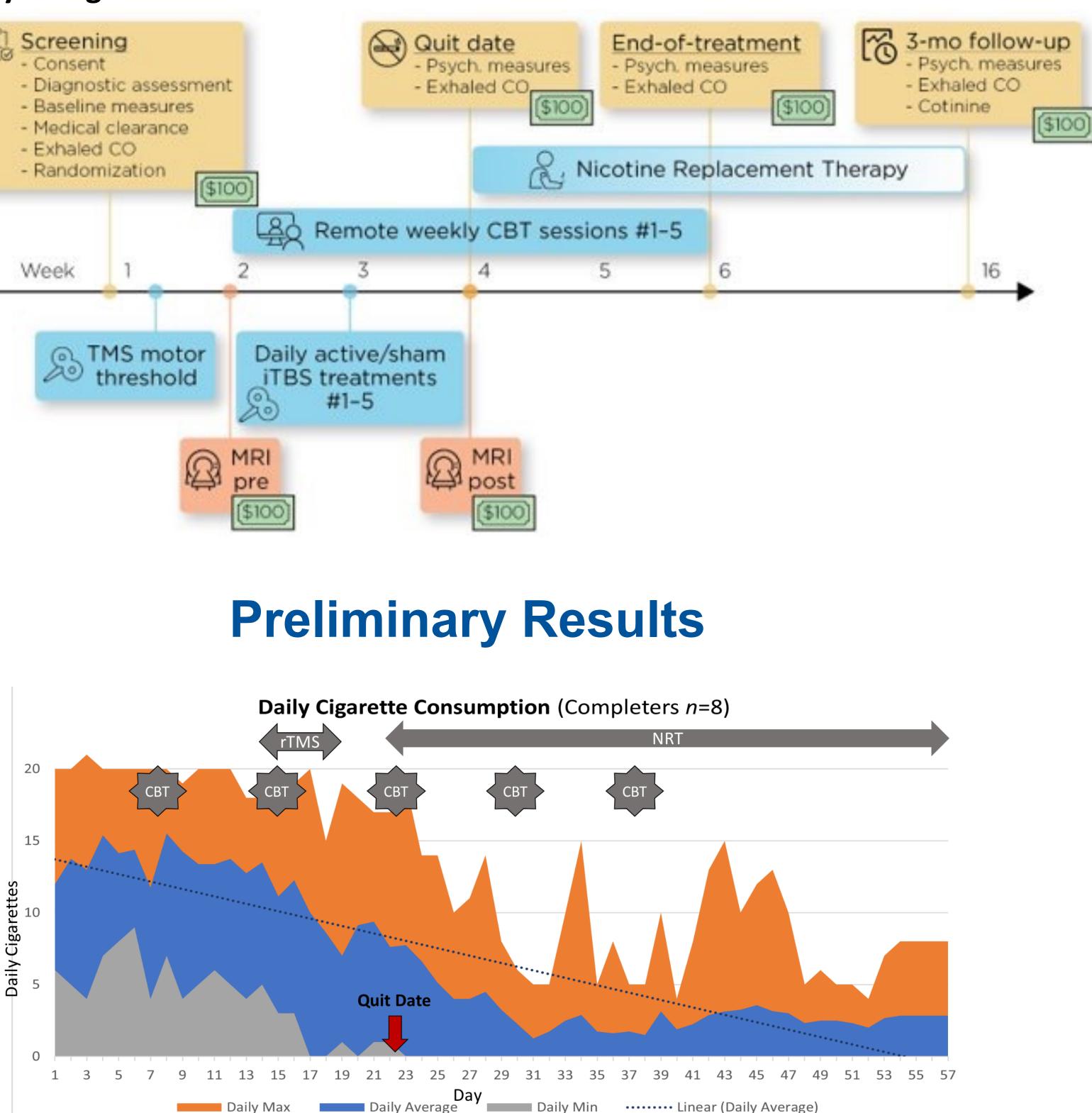


ACC = anterior cingulate cortex dlPFC = dorsolateral prefrontal cortex vmPFC = ventromedial prefrontal cortex VTA = ventral tegmental area NAcc = nucleusaccumbens OFC = orbital frontal



Study Design

Screening Quit date Diagnostic assessment Baseline measures Medical clearance - Exhaled CO Randomization Week TMS motor Daily active/sham 🔊 threshold **iTBS** treatments #1-5 \$100



- Results indicated decreased daily max and average cigarette consumption (n=8)
- Average acceptability scores of tMS and overall treatment (9.1/10) exceeded predefined goal of 7/10
- No serious adverse events (SAEs) including seizures, most common AEs included headaches
- 8/10 completers, 80% retention rate meeting predefined goal of 80%

Future Directions

Aim 1: Determine preliminary effect size estimates using 7-day point prevalence smoking abstinence at end-of-treatment and 3 months

Aim 2: Demonstrate target engagement of neurocircuitry using changes in functional connectivity (FC) between the rTMS cortical target and right posterior insula

Conclusions

- Individualized rTMS over post-central gyrus (insula-targeted) combined with CBT and followed by NRT appears to be safe, feasible, acceptable
- Requires neuroimaging and neuronavigation
- Efficacy being tested in ongoing RCT • Five sessions of insula-targeted rTMS with 5 weeks of CBT and NRT led to reductions in
- cigarettes per day, carbon monoxide level, and cigarette craving intensity • Treatment was reported to be highly acceptable, indicating a future potential to reduce smoking in this tobacco use disparities group

Background

WIKIStim.org is an online wiki that catalogues research papers related to neuromodulation to increase access to scientific literature and data.

- size, primary outcome)

Goal of this team

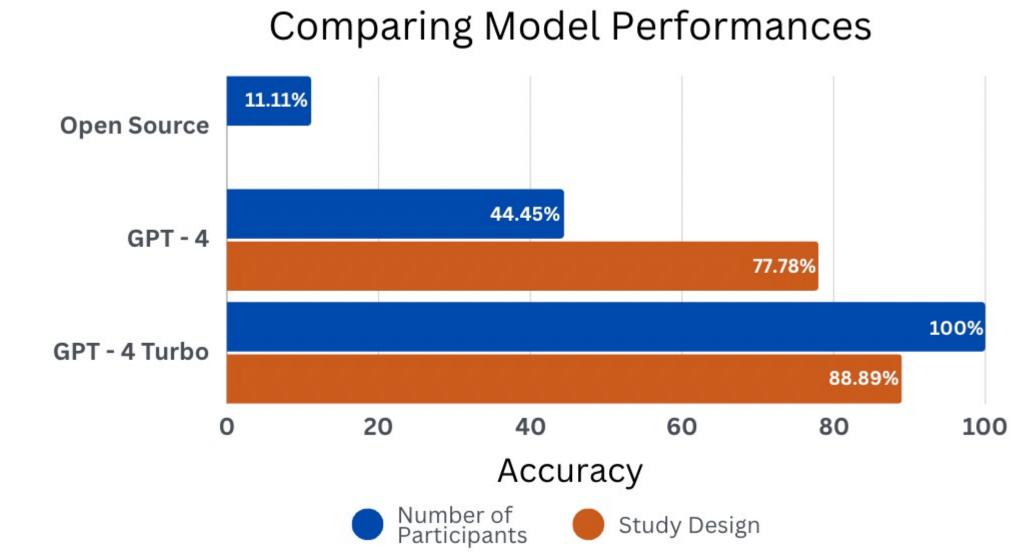
Reimagine & transform the process for extracting metadata from manual input by the uploader to being an automated system using Large Language Models (LLMs)

New process under development:

Retrieve full text of paper using the --> PubMed API

Experimentation & Current Achievements

To bolster reliability and reproducibility, we analyzed responses for two features: study design & sample size across 18 papers Compared responses against our "ground truth" responses directly obtained from Wikistim



Limitations and Next Steps

Limited features tested so far

- duration, and pain location)
- sophisticated approach



Scan QR Code to View Pre-Print

. Young is supported by VA Career Development Awards (CDA-1, CDA-2), Clinical Science Research, and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by VA Career Development Awards (CDA-1, CDA-2), Clinical Sciences: and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical and Duke Interdisciplinary Studies Bass Connections. C. Polick is supported by Duke-VA National Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke-VA National Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinical Scholars Program (NCSP). D. Rubenstein is supported by Duke Clinica Moore, MD, PhD; Eric Dedert, PhD; A. Kriby, M. Dennis, L. Hair, C. Polick, A. Troutman, M. Evans, & many more; Duke Department of Psychiatry and Analysis Center (BIAC), Duke Institue for Brain Sciences (DIBS), Duke Clinical Research Institute (DCRI)



Brain & Society

WIKIStim Project

• Optionally accompanied by metadata (e.g., design, sample

Current metadata process is manual extraction by the uploader

Prompt LLINI to Verify LLM's response extract meta & write to database table if reasonable Meta data to use Display extracted meta data to use 	
---	--

• We found that GPT-4 turbo replicates the metadata manual extraction with an accuracy varying from 89% to 100%

• Expanding to more features (e.g., definition of success, trial

Lower performance with complex features (i.e. study design) Exploring our prompting techniques and implementing a more





Scan QR Code to View Bibliography