research demonstrating similar findings is recommended along with studies investigating whether or not the treatment of hypertension and OSA can improve auditory learning/memory.

Categories: Sleep and Sleep Disorders
Keyword 1: sleep disorders
Keyword 2: hypertension
Keyword 3: memory: normal
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79 Continuous Theta Burst Stimulation (cTBS) over the Inferior Parietal Cortex Decreases Default Mode Connectivity and Improves Overnight Sleep in People with Insomnia

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Objective: Chronic insomnia is a highly prevalent disorder affecting approximately one-in-three Americans. Insomnia is associated with increased cognitive and brain arousal. Compared to healthy individuals, those with insomnia tend to show greater activation/connectivity within the default mode network (DMN) of the brain, consistent with the hyperarousal theory. We investigated whether it would be possible to suppress activation of the DMN to improve sleep using a type of repetitive transcranial magnetic stimulation (rTMS) known as continuous theta burst stimulation (cTBS).
Participants and Methods: Participants (n=9, 6 female; age=25.4, SD=5.9 years) meeting criteria for insomnia/sleep disorder on standardized scales completed a counterbalanced sham-controlled crossover design in which they served as their own controls on two separate nights of laboratory monitored sleep on separate weeks. Each session included two resting state functional magnetic resonance imaging (fMRI) sessions separated by a brief rTMS session. Stimulation involved a 40 second cTBS stimulation train applied over an easily accessible cortical surface node of the DMN located at the left inferior parietal lobe. After scanning/stimulation, the participant was escorted to an isolated sleep laboratory bedroom, fitted with polysomnography (PSG) electrodes, and allowed an 8-hour sleep opportunity from 2300 to 0700. PSG was monitored continuously and scored for standard outcomes, including total sleep time (TST), percentage of time various sleep stages, and number of arousals.
Results: Consistent with our hypothesis, a single session of active cTBS produced a significant reduction of functional connectivity ($p < .05$, FDR corrected) within the DMN. In contrast, the sham condition produced no changes in functional connectivity from pre- to post-treatment. Furthermore, after controlling for age, we also found that the active treatment was associated with meaningful trends toward greater overnight improvements in sleep compared to the sham condition. First, the active cTBS condition was associated with significantly greater TST compared to sham ($F(1,7)=14.19$, $p=.007$, partial eta-squared=.67). Overall, individuals obtained 26.5 minutes more sleep on the nights that they received the active cTBS compared to the sham condition. Moreover, the active cTBS condition was associated with a significant increase in the percentage of time in rapid eye movement (REM%) sleep compared to the sham condition ($F(1,7)=7.05$, $p=.033$, partial eta-squared=.50), which was significant after controlling for age. Overall, active treatment was associated with an increase of 6.76% more of total sleep time in REM compared to sham treatment. Finally, active cTBS was associated with fewer arousals from sleep ($t(8) = -1.84$, $p = .051$, $d = .61$), with an average of 15.1 fewer arousals throughout the night than sham.
Conclusions: Overall, these findings suggest that this simple and brief cTBS approach can alter DMN brain functioning in the expected direction and was associated with trends toward improved objectively measured sleep, including increased TST and REM% and fewer arousals during the night following stimulation. These findings emerged after only a single 40-second treatment, and it remains to be seen whether multiple treatments over several days or weeks

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can sustain or even improve upon these outcomes.

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Keyword 2: brain function
Keyword 3: neurostimulation
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80 Processing Speed Mediates the Association between Executive Functioning and Adaptive Functioning Among Older Adults

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Objective: Cognitive decline is expected in normative aging (Cabeza et al., 2018; Salthouse, 2019), which can lead to impairments in adaptive functioning (Yam et al., 2014). Several cognitive domains have been associated with adaptive functioning in older adult samples, including processing speed and executive functioning (e.g., Nguyen et al., 2019; Vaughn & Giovanello, 2010). A recent study examining a mixed clinical sample of older adults demonstrated that processing speed was more predictive of functional decline than other cognitive domains, including aspects of executive functioning (Roye et al., 2022). Therefore, this study attempts to build on previous findings by further examining the relationships between processing speed, adaptive functioning, and executive functioning. Specifically, it investigated the extent to which processing speed mediated the associations between executive functioning and adaptive functioning.
Participants and Methods: Participants (N = 239) were selected from a clinical database of neuropsychological evaluations. Inclusion criteria were age 60+ (M = 74.0, SD = 6.9) and completion of relevant study measures. Participants were majority White (93%) women (53.1%). Three cognitive diagnosis groups were coded: No Diagnosis (N = 82), Mild Neurocognitive Disorder (NCD; N = 78), and Major NCD (N = 79). The Texas Functional Living Scale (TFLS) was used as a performance-based measure of adaptive functioning. Processing speed was measured using the Coding subtest from the Repeatable Battery for the Assessment of Neuropsychological Status. Executive functioning performance was quantified using part B of the Trail Making Test, Controlled Oral Word Association Test, and Similarities and Matrix Reasoning subtests from the WAIS-IV and WASI-II. Mediation models included age and years of education as covariates and indirect effects were assessed with bootstrapped confidence intervals (Hayes, 2020).
Results: Processing speed mediated all measures of executive functioning. The pattern was consistent for all executive functioning measures such that poorer executive functioning was associated with poorer processing speed, which was subsequently associated with poorer adaptive functioning. Direct effects were significant for all models ($ps < .03$), suggesting that executive functioning maintained unique associations with adaptive functioning. Follow-up analyses indicated no evidence for moderation of the mediation models based on diagnostic group.
Conclusions: These results highlight the importance of processing speed in understanding real-world implications of pathological and non-pathological cognitive aging. Processing speed mediated all relationships between executive functioning and adaptive functioning. There was no evidence for moderation of these effects, supporting generalizability regardless of neurocognitive disorder and etiologic subtype. Further investigation is warranted into the importance of processing speed in explaining associations of other cognitive domains with adaptive functioning.

Categories: Aging
Keyword 1: adaptive functioning
Keyword 2: everyday functioning
Keyword 3: aging disorders
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81 Assessment of Functional Capacity Interview (AFCI): A New Informant-

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