

frontal lobes are associated with better outcomes for naming and verbal memory (LM) when compared to left ATLs. Interestingly, verbal list learning declined more in left than right FL and right ATL patients suggesting a possible language based executive functioning component to this memory measure. As expected, our study further supports that left ATLs are associated with material specific memory declines. This pattern was not seen for those undergoing a right ATL (i.e., nonverbal memory did not decline in patients with right ATL).

Categories: Epilepsy/Seizures

Keyword 1: epilepsy / seizure disorders - surgical treatment

Keyword 2: frontal lobes

Keyword 3: temporal lobes

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39 Does Pseudoneglect Modifies The Visuospatial After-Effects Of Vertical Prism Adaptation?

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Objective: The prism adaptation (PA) with rightward shifting lenses is a promising rehabilitation technique for left hemispatial neglect. The PA has also been applied in healthy individuals to investigate cognitive mechanism(s) underlining such adaptation. Importantly, studies have suggested that PA may primarily impact the functions of the dorsal or the ventral attentional stream, and we have previously reported that PA to the upward and downward shifting lenses leads to a significant aftereffect in vertical line bisection task. However, this post-adaptation effect, similarly to that seen in the horizontal plane, might have been modified by the presence of the vertical pseudoneglect healthy participants often experience prior to PA. Thus, the aim of this study was to test this hypothesis.

Participants and Methods: 30 right-handed healthy adults (age M=22,4) performed a computerized line bisection (LB) in vertical and horizontal condition. The bisections were performed twice: before and after PA procedure. Participants took experimental procedure three times, each in at least 24 h of break, each time in one of three conditions of shifting lenses; down, up, control. Both LB tasks (vertical and horizontal) consisted of 24 lines, each centered on 23" touch screen. The participants were asked to find the middle of the line. Throughout the experiment, participants were comfortably seated with their head positioned on a chinrest. Participants were fitted with prismatic goggles that deviated their visual field by 10 degrees. For the adaptation we used the Peg-the-mole procedure consisting of 120 pointing movements.

Results: To assess the effect of the vertical PA on landmark judgments we performed a repeated measures ANOVA with direction of PA (upward/downward), the condition of LB (vertical/ horizontal) and pre- vs post adaptation as a between-subjects factor. This analysis revealed a main effect of the direction of PA ($p < 0.001$) and a main effect of condition ($p < 0.001$). Overall, however, only adaptation in up-shifting lenses led to significant aftereffects ($p < 0.05$). Further, when we excluded participants who did not exhibited horizontal pseudoneglect in preadaptation LB, the effect of PA in down-shifting PA emerged in vertical LB ($p < 0.05$). Further, this group also exhibited the aftereffect of PA in up-shifting lenses for the horizontal ($p < 0.01$) and the vertical LB ($p < 0.05$). Additionally, these participants exhibited a congruent tendency after upward and downward PA, and tended to allocate their attention more upward and rightward.

Conclusions: The results of this study confirm that the vertical PA evokes a visuo-spatial bias. Moreover, the PA aftereffect seems to be modified by the presence of the pre-adaptation pseudoneglect. Whereas the mechanism inducing this bias is not fully known, it might be explained in light of the interhemispheric activation-inhibition balance. Both the upward and downward PA may primarily lead to activation of the posterior regions of the right hemisphere, and this activation may result with the upward and rightward bias in the LB task. However, future research with neuroimaging techniques is needed to test this hypothesis.

Categories: Visuospatial Functions/Neglect/Agnosia

Keyword 1: neurocognition

Keyword 2: neglect

Keyword 3: asymmetry

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40 Disorders Of The Anterior Attentional-Intentional System In COVID-19 Survivors – Preliminary Results

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Objective: In December 2019, the first reports came from China about cases of pneumonia caused by a previously unknown coronavirus, SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), responsible for a disease called COVID-19. Since then, the pandemic has spread worldwide, affecting people's physical and mental health and as well as quality of life. Currently, many people are experiencing the health consequences of contracting COVID-19, also due to the impact this disease has on the central nervous system. As a result, in addition to well-known ailments, such as headaches, chronic fatigue or smell and taste disorders, COVID-19 survivors may develop neuropsychological problems such as executive-attentional deficits. However, the specificity of these executive-attentional problems has not been determined. Thus, the purpose of this study was to learn if survivors of COVID-19 may present with more generalized or rather specific dysfunction(s) of the anterior attentional-executive system.

Participants and Methods: The study group consisted of 37 individuals who underwent COVID-19 (age $M=44$, education $M=17$). The comparison group consisted of 25 matched controls tested before the COVID-19 pandemic. The experimental procedures included (1) a clinical interview, (2) an assessment of selected cognitive functions (3) and attentional-

executive functioning, which was assessed using the ROtman-Baycrest Battery to Investigate Attention (ROBBIA); a battery was designed to measure three attentional processes (i.e., energizing, task setting, and monitoring). Overall, four reaction time (RT) subtests from ROBBIA were administered: (1) Simple RT, (2) Choice RT, (3), Prepare RT, and (4) Concentrate. For each subtest, the instruction was to press an appropriate button on a response pad as quickly as possible when a target stimulus (one of the following capital letters: A, B, C, or D) is detected, but also (in Choice RT, Prepare RT and Concentrate) to make as few errors as possible.

Results: Overall, the analyses revealed that individuals who survived COVID-19 exhibited a different effect of the warning stimulus compared to controls. Specifically, COVID-19 survivors presented an increase in reaction time from 1s warning condition to 3s warning condition being significantly greater than the control group's increase ($p < .05$). Also, only in the COVID-19 group, reaction time in the Concentrate task tended to be longer ($p = 0.01$). No group differences in monitoring (e.g., number of errors) or task setting emerged.

Conclusions: The patients' problems appear analogous to those observed in other chronic somatic diseases, likely due to the impact of COVID-19 on the frontal lobe's medial regions. However, due to a small sample size, future neuroimaging research, including computerized studies of attentional-execution networks, is needed to confirm that COVID-19 may predominantly affect the energization system that contributes to these patient's cognitive slowing and defective ability to sustain attention.

Categories: Executive Functions/Frontal Lobes

Keyword 1: computerized neuropsychological testing

Keyword 2: frontal lobes

Keyword 3: reaction time

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41 Concussion History, Physical Activity, and Athletic Status Predict Subjective but not Objective Executive Functioning