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6 The Relationship Between Inhibitory Control Impairment in Social Disinhibition Following Severe Traumatic Brain Injury

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Objective: Inhibitory control impairment is highly prevalent following traumatic brain injury (TBI). There have not been any empirical investigations into whether this could explain social disinhibition following severe TBI, i.e. socially inappropriate behaviour of verbal, physical or sexual nature. Further, social context has proven to be important in studying social disinhibition and using a social version of an established task for the assessment of inhibitory control may provide a new perspective. Therefore, the objectives of this research study were to investigate the role of inhibitory control impairment in social disinhibition following severe TBI, using a social and a non-social task. We hypothesized that people with TBI and clinical levels of social disinhibition would perform worse on both task versions, when compared to those with low disinhibition levels. Further, we hypothesized that participants high on social disinhibition would perform worse on the social, when compared to the non-social version.

Participants and Methods: We conducted a between-group comparative study. Twenty-six adult participants with severe TBI were matched with 27 adult, healthy controls based on gender, age and education. Frontal Systems Behavior Scale and Social Disinhibition Interview were used to assess social disinhibition. A computerized task based on the cued go/no-go paradigm was used to assess inhibitory control. We included two versions of this task – a coloured (non-social) Go/No-Go with different colored rectangles, and an emotional (social) Go/No-Go with emotional faces serving as ‘go’ and ‘no-go’ cues. Two-way mixed ANCOVAs were used to test between-group differences in errors of commission and response speed.

Results: Unexpectedly, the TBI and the control group did not significantly differ on their levels of depression, anxiety, stress, or their level of social disinhibition. Overall, participants were slower ($F(1,47) = 15.212, p < .001, \eta^2 = .245$) and made more errors of commission on no-go trials ($F(1,44) = 11.560, p = .001, \eta^2 = .208$) on the social Go/No-Go task. There was no main effect of participants’ brain injury status on errors of commission on no-go trials or mean reaction times. When categorized based on disinhibition level (high vs low), participants in the high-disinhibition group made more errors on the social task ($F(1,41) = 4.095, p = .050, \eta^2 = .091$) than those in the low-disinhibition group, and more errors on the social, compared to the non-social task (task-group interaction ($F(1,41) = 7.233, p = .010, \eta^2 = .150$)).

Conclusions: Based on these initial results, social disinhibition is associated with inhibitory control impairment, although this is only evident when a social inhibitory control task is used for assessment. We did not find any relationship between social disinhibition and the speed with which people react to stimuli. The results of this study add to the conceptualization of social disinhibition that is commonly present after severe TBI.

Categories: Social Cognition

Keyword 1: disinhibition

Keyword 2: inhibitory control

Keyword 3: traumatic brain injury

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Paper Session 06: Epilepsy related topics

2:15 - 3:45pm

Thursday, 2nd February, 2023
Town & Country Ballroom D

Moderated by: Natasha Ludwig

1 Network Efficiency as Structural Reserve: Pre- And Post-Operative Associations Between Network