Psychosocial and Physical Health of University Students with Mild Head Injury

Angela Dzyundzyak, Ph.D. Candidate1, Julie Baker, Ph.D. Candidate1 & Dawn Good, Ph. D., C. Psych.1,2
1Department of Psychology, Brock University, St. Catharines, Ontario, Canada
2Centre for Neuroscience, Brock University, St. Catharines, Ontario, Canada

Background
Every year many young adults sustain trauma to the head and the majority of these traumas are mild head injuries (MHI). MHI can involve alterations in consciousness without extensive neural loss2,3 and may result in cognitive and emotional sequelae, although the persistence of residual symptoms is debated4,5. Generally, it has been suggested that post-concussive symptoms such as cognitive, affective, and physical complaints subside after a period of three to six months and functioning is assumed to return to previous abilities4,5. However, these difficulties may not be transient and the sequelae of MHI may have a subtle impact on the overall psychosocial and physical health of these young adults.

Until recently, little research has been conducted to examine the persistence of emotional and cognitive sequelae following MHI in high-functioning persons such as university students. The prefrontal cortex (PFC), especially the ventromedial PFC (vPFC), has been implicated in the modulation of emotional, impulsive and autonomic responses6. This region is particularly vulnerable in head trauma7, and therefore, emotional responses may be at risk. Previous research from our lab has demonstrated that students with MHI report less stress and exhibit lower arousal despite increased reports of life stressors as compared to their no-MHI cohort8,9,10,11. Additionally, as a function of lowered arousal, our research9,12 has shown that students with a history of MHI engage in riskier behaviours, report higher impulsivity and physical aggression, and participate in more socially unacceptable behaviours—all of which can compromise the success of their social interactions.

Purpose
- To investigate psychosocial and physical health of cognitively competent persons who have sustained mild head injury
- To examine the potential chronicity of socioemotional symptom sequelae postinjury

Method
University students (N = 230) completed various psychological and demographic questionnaires:
- Behavioural Inhibition and Behavioural Avoidance Scale (Benjet, Gray & Water, 1994)
- Emotional Intelligence (E-I; Runco, 2001)
- Social Problem Solving Inventory Revised (SPS-R; 1, D’Zurilla, Nori & Maysides-Oistrich, 1996)
- State-Trait Anxiety Inventory (STAI; Spilbergers, 1983)
- Symptom Assessment – 45 Questionnaire (SA-45, 1990)
- BIS-11 (Keye, 1997)
- State-Trait Anxiety Inventory (STAI; Spilbergers, 1983)
- Sensitivity to Reward/Sensitivity to Punishment Questionnaire (Pressman, Eysenck & Eysenck, 1978)
- Buss and Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1972)
- Hartritt Impulsiveness Scale (HIS; Elton & Bernt, 1995)
- Stroop Color and Word Test (Stroop, 1935)
- Sensation Seeking – Form 3 (SSF-3, Zuckerman, Eysenck & Eysenck, 1978)
- Post Concussive Symptom Checklist (PCL-C; Grower, Calhoun, Brantley, & Catlett, 1992)
- Modified Life Changes Scale (adapted from Holmes & Rahe, 1967)

Results

**Results (cont’d)**

Although students do not differ in terms of their reported social problem solving skills F (1, 214) = 1.12, p = .292, students who have experienced an MHI are more sensitive to risks, F (1, 222) = 9.02, p = .003, more disinhibited, F (1, 227) = 4.99, p = .026, and have more desire to engage in extreme activities, F (1, 227) = 8.15, p = .005. Furthermore, the MHI group scores higher on the BAS, F (1, 213) = 5.61, p = .019, suggesting that students with MHI are more motivated by appetitive/rewarding stimuli.

Students in the MHI group are less motivated by avoidance of aversive outcomes, demonstrated by the lower scores on Behavioural Inhibition, F (1, 224) = 4.50, p = .035, and Harm Avoidance Scales, F (1, 228) = 7.98, p = .005, than the no-MHI group.

Finally, students who have sustained a MHI engage in socially unacceptable behaviour, F (1, 226) = 21.41, p < .001, and erratic lifestyle, F (1, 225) = 10.68, p = .001, more often when compared to their no MHI counterparts. However, the two groups did not differ on levels of interpersonal manipulation, F (1, 223) = .44, p = .559, or callous affect, F (1, 221) = 3.67, p = .057.

Discussion & Conclusions

In general, over 1/3 of students acknowledged a MHI with many reporting no associated LOC, most resulting from sports-related activities. Despite no differences in reported mental health status, nor seeking treatment for MHI, students with MHI reported significantly more post-concussive-like symptoms (e.g., headache) with greater intensity and for longer durations than students with no history. Students with MHI did not differ from their cohort in terms of social problem-solving skills, but reported significantly higher levels of impulsivity, engaging in riskier behaviours, and participating in more socially unacceptable behaviours; and while they reported significantly more life stressors (e.g., finances), they did not report feeling more stressed. Our findings demonstrate long-lasting individual differences in cognitively competent persons with a history of mild trauma to the head which can hinder the success of their social interactions. Ultimately, the overall profile of students with MHI is similar to that of persons with more severe neural trauma.

References
- Kirby, 1997

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