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Preface: Treatments for Emotional Issues After Traumatic Brain Injury

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Of the vast array of consequences of traumatic brain injury (TBI), emotional deficits are among the most prevalent, persistent, and challenging to treat. However, they remain grossly understudied compared to other impairments, especially with respect to interventions. As emotional functioning is integral to well-being and quality of life, it is our obligation as rehabilitation researchers and clinicians to endeavor to narrow this gap. In order to enhance awareness of this void and inspire momentum needed to fill it, this Topical Issue presents empirical studies evaluating treatments for emotional deficits in people with TBI.

Emotional functioning pertains to the awareness, recognition, expression, and regulation of emotions, all of which are susceptible to disruption from a TBI. The papers in this *Issue* describe clinical trials of interventions that target emotional functioning deficits frequently observed after a TBI, including poor emotional self-awareness, impaired recognition of emotional cues from others, anger and aggression, depression, and reduced emotional and behavioral self-control. With regards to emotional rehabilitation following a TBI, each article contributes information sorely needed to: advance our knowledge of different treatment approaches; offer directions for future research; and provide evidence needed to inform clinical decision-making.

This Topical Issue contains the first clinical trial of a treatment for people with TBI who have poor emotional self-awareness, a deficit known as alexithymia. It is alarming that some studies have found the incidence of alexithymia in the TBI population to be as high as sixty percent.¹ The significance of this deficit lies in the fact that it has been associated with poor coping skills, substance abuse, suicidal ideation, somatization, reduced empathy, low relationship satisfaction, and poor quality of life.^{2–6} Notably, many studies show a link between alexithymia and poor emotional control, and it is believed that emotional awareness is a critical foundation for regulating emotions.⁷ This *Issue* presents findings from a small phase I study trialing a computer-based training program to reduce alexithymia in participants with TBI. The outcomes from this study concern changes in emotional self-awareness as well as generalization to emotion regulation including anxiety, depression, anger, and affect.

Just as it is important to have awareness and recognition of self-emotions, the ability to recognize others' emotions (socio-emotion perception) is also essential to overall emotional functioning and regulation. Others' emotions have an effect on our own affect and how we respond to others. If another person's emotions are misperceived, the result can be emotional responses (or lack thereof) that lead to unexpected and socially inappropriate behaviors. To date, a handful of treatment studies have successfully confronted emotion perception problems following TBI.^{8–10} However, the major caveat of these studies is that they failed to

find changes in related outcomes such as empathic behavior and relationship satisfaction.¹¹ This shortcoming has been attributed to the fact that past programs do not directly train these broader related skills. In this Special Issue, Dr. Westerhof-Evers and colleagues describe an enhanced training program that they created to address some of the past study limitations. Their intervention incorporates both emotion perception training and lessons for acceptable behavioral responses to others' emotions. This Level 1b randomized controlled trial represents an important advance in our knowledge and understanding of evidence-based treatment approaches for emotion perception deficits after TBI.

This Topical Issue also presents two randomized controlled trials addressing anger and aggression after TBI. We know that many challenges often accompany anger and aggression including interpersonal difficulties and relationship problems, caregiver burden, social isolation, violent criminal offenses, and decreased community re-integration (e.g., employment failures).^{7,12} With very little evidence for strategies to effectively manage anger and aggression in persons with TBI, there is an urgent need for progress in this area, and the two articles in this issue are steps in the right direction. The study by Dr. Hart and colleagues examines the effect of a behavioral intervention, while Dr. Hammond and colleagues investigate the effectiveness of a pharmaceutical treatment for anger and aggression. Both studies make significant contributions toward establishing more effective treatments for anger and aggression following TBI.

Depression is another prevalent disorder experienced by people with TBI (ranging between 25–61%¹³) for which consensus regarding effective treatment approaches is still lacking. As rigorous studies investigating different treatments for depression are scarce,¹³ the requisite levels of evidence to support treatment recommendations are deficient. Depression can be a challenging disorder to study. Entangled in and confounded by many other problems (e.g. substance abuse, anxiety, premorbid depression), especially after TBI, it can be an elusive target for treatment. This Topical Issue offers two articles describing outcomes from randomized controlled trials of treatment for post-TBI depression. The article by Dr. Fann and colleagues is impressively the largest Class I pharmacological antidepressant study to date. The second paper by Dr. Bombardier and colleagues examines factors (i.e., cognitive, behavioral, and physical activity) that influenced participants' responsiveness to a cognitive behavioral therapy trial for depression. The outcomes of this novel examination can inform the development of more effective treatments for depression.

Lastly, Tsasouides et. al. took a more global approach to improving emotional functioning with an intervention they designed to teach people with TBI the skills needed to more effectively regulate their emotions. Emotion regulation, which pertains to one's ability to control (e.g., initiate, inhibit, alter) their emotional states and behaviors based on situational context and their personal goals, is a necessity for healthy emotional functioning.¹⁴ Frequently disrupted following TBI, poor emotional control has been linked with disinhibited and socially undesirable behaviors.¹⁴ In addition to offering a novel intervention, this study leveraged the advances in online video conferencing technology to deliver this group treatment remotely. This broadened the therapeutic reach by overcoming common distance and transportation barriers for this population. The authors describe post-

treatment changes in emotion regulation, affect, and satisfaction with life at the end of treatment delivery and a three-month follow-up.

The contributions of the authors to this Special Issue and to this field are to be applauded. Emotions are complex in nature, often confounded by other factors (e.g., cognition, pain) and systems (e.g. familial, social, societal). Emotions are intangible and subjective, and thus are a challenge to measure. The heterogeneity of TBI further exacerbates this complexity. Is it any wonder that progress has been slow? Rehabilitation researchers must be innovative in order to overcome these challenges rather than being deterred by them.

The works in this Issue significantly progress our understanding about interventions for emotional deficits following TBI. However, the state of the science for studying and treating emotional deficits in people with TBI is sorely lagging behind the needs, and a lot more evidence-based research is required to support more confident treatment recommendations. As such, high quality studies aimed at improving emotional functioning following TBI needs to be a priority; the well-being and life quality of our patients depend on it.

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