Social cognition is a broad term that refers to the processes subserving behaviour in response to the behaviour of others, and in particular, to the ‘higher cognitive processes’ (such as social reasoning and social communication) that facilitate social behaviours [1, 2]. Social cognition enables individuals to predict the behaviour of others, share experiences with other individuals, and communicate effectively [3]. Deficits in social cognition, therefore, are likely to result in displays of inappropriate behaviour in social contexts, and the inability to form and maintain social relationships. These difficulties in turn may have far reaching consequences, such as the inability to maintaining employment, and thus may reduce overall quality of life.

Conceptually, a distinction can be drawn between “hot” and “cold” social cognition [3]. “Hot” social cognitions consists of emotion perception and processing, identifying and empathising with another’s emotional state or affective empathy, self-awareness and self-regulation including apathy and disinhibition. “Cold” social cognition, on the other hand, refers to thinking about things from another person’s point of view (theory of mind and cognitive empathy) and pragmatics (the context of language which contributes to its meaning).

It is also important to note that from a behavioural perspective, there is evidence to indicate that social cognition is not necessarily related to non-social aspects of cognition. In particular, individuals with discrete frontal lesions from trauma or other pathology often present with social functioning that is disproportionately impaired relative to their level intellect or general cognitive functions such as processing speed, memory, and attention [e.g., 4, 5-7].

Deficits in social cognition are typically impaired following moderate to severe traumatic brain injury (TBI). For instance, 60-70% of adults with severe TBI self-report little to no emotional empathy compared to 30% of demographically matched control participants [8-12]. The ability to recognise emotions using photographs of facial expressions in TBI individuals compared to matched controls was examined in a meta-analysis of 296 adults with moderate-severe TBI from 13 studies [13], with a relatively large effects indicated. Here, it was estimated that up to 39% of people with severe TBI experience deficits in recognizing emotions from photos of facial expressions.

Individuals with TBI also self-report lower cognitive empathy (i.e., the ability to understand another person’s perspective or mental state) than do matched controls with the incidence of impairment being around 50% [8, 14, 15]. In a recent meta-analysis based upon 173-354 adults with acquired brain injury, roughly 50% of whom had TBI, effect sizes for theory of mind tasks were moderate to large and this was true for the TBI group alone [16]. Importantly, deficits in social cognition as a result of TBI are significant predictors of poor interpersonal behaviour [17].
TBI compromises structures in the brain that are thought to underlie social cognitive functioning. Regardless of the primary site of the brain injury, the typical pattern of acceleration-deceleration forces that accompany such injuries essentially compromises frontal lobe activity. Specifically, upon impact, soft brain tissue scrapes across the bony floor of the anterior and middle fossa of the skull, and medial frontal surfaces are compressed against the dorsal bone and collide with the cerebral falx resulting in immediate contusions (i.e., bruising to the brain) [18]. The resulting injury also causes Wallerian degeneration (a process of cell degeneration or death) that disrupts neural activity both within and to the ventrolateral, medial and orbital frontal lobes and the ventromedial temporal lobes [18-22]. Diffuse axonal injury to the brainstem, corpus callosum and the gray-white matter junctions of the cerebral cortex [23-25] further disrupt connections between subcortical and frontal systems [26].

In clinical practice, deficits in social cognition have traditionally been inferred on the basis of the reports from significant others and/or on the basis of neuropsychological test performance in domains such as processing speed, attention, working memory, long-term memory and executive functioning [27]. However, while impairments in these alternative cognitive domains are likely to undermine a person’s ability to communicate in social settings, they do not account for the social cognition deficits that can occur. Indeed, previous research indicates that social cognition is often not associated with these other areas of cognitive functioning [27]. More suitable tools to assess social cognition deficits in clinical practice are currently being developed.

References:
