Brain Functions and Changes in Behaviour

Introduction

Changes in behaviour are common after acquired brain injury. Many areas of the brain can be affected by severe traumatic or vascular injuries, affecting a person’s cognitive, physical, communication, and behavioural functioning. The following table may be of assistance in understanding the relationship between different areas of the brain, and changes in behaviour.
<table>
<thead>
<tr>
<th>PART OF THE BRAIN</th>
<th>WHAT IS IT FOR?</th>
<th>POSSIBLE CHANGES IN BEHAVIOUR</th>
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</table>
| Frontal Lobe      | Planning and Organisation | Decreased ability to organise information, ideas, or activities  
|                   |                        | Difficulty sequencing activities and behaviour  
|                   |                        | Unpredictable behaviour due to poor planning  
|                   |                        | May not complete activity or follow through  
|                   |                        | Frustration & irritability when things don’t go to plan  
|                   |                        | Confusion about what to do and when to do things  
|                   |                        | Clutter and lost items  
| Frontal Lobe      | Initiation of behaviour | Low motivation & activity levels  
|                   |                        | Apathy or lack of interest  
|                   |                        | Difficulty following through to complete tasks & activities  
|                   |                        | May get easily bored and frustrated  
| Frontal Lobe      | Self awareness and self monitoring Insight and adjustment | Impaired social awareness and judgment  
|                   |                        | Reduced motivation to change behaviour  
|                   |                        | Lack of awareness of errors  
|                   |                        | Lack of awareness of impact of own behaviour on others  
|                   |                        | Poor awareness of emotions in self or others, so inability to self manage emotions  
| Frontal Lobe      | Flexibility in thinking & behaviour | Concrete thinking  
|                   |                        | Difficulty thinking of alternative ideas or behaviour  
|                   |                        | Rigidity in ideas & behaviour, difficulty shifting or changing behaviour  
|                   |                        | Argumentativeness  
|                   |                        | Irritability with others  
|                   |                        | Low frustration tolerance  

Reviewed Aug 2017  
For Review Aug 2018: ABIOS Neuropsychologist
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| Frontal Lobe           | Thinking, reasoning & decision making                                          | Misunderstanding of what others do or say  
Difficulty with logical reasoning and problem solving – coming up with more than one option  
Difficulty working out solutions to practical & social problems  
Poor judgment  
Impulsive decision-making  
May take longer to make decisions |
| Parietal and Temporal Lobes | Use of language to communicate with others  
- verbal  
- written | Misunderstanding communication  
Misinterpretation of social communication and cues so may respond inappropriately  
Difficulty understanding others can lead to irritability, anger, frustration  
Difficulty expressing ideas, feelings, preferences  
Difficulty regulating voice tone, volume, rapid rate of speech - may seem irritable, angry |
| Temporal Lobe          | Memory & new learning  
Remembering tasks, instructions, events  
Remembering own & others behaviour | Forgetting to do things  
Forgetting conversations, instructions, decisions that have been made  
Difficulty learning new tasks or behaviours  
Difficulty following through with behavioural change  
Misperception, confusion or memory loss – can lead to suspiciousness & paranoia  
Frustration with effort, difficulty or failure |
| Parietal Lobes         | Spatial awareness  
Perception & location of objects and persons in space  
Understanding of own body in space and perceptual processing of information | Confusion or uncertainty  
Lack of trust & confidence in self, others and environment  
Effort & energy required for ADL leads to  
- fatigue and tiredness  
- frustration/irritability  
Misperception of sensory information – can lead to suspiciousness & paranoia |
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<tbody>
<tr>
<td>Cerebellum and Brain Stem</td>
<td>Regulation of arousal and alertness</td>
<td>Sleep regulation</td>
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<td>Control of physical functions and mobility</td>
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<td>Sleep disorders</td>
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<td>Tiredness or fatigue</td>
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<td>Sensitivity to noise, light, heat, cold, fatigue – can lead to irritability, low frustration</td>
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<td>tolerance</td>
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<td>May lack interest and motivation in previously enjoyed activities or interests</td>
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<td>Limbic System</td>
<td>Perception and understanding of emotions and mood</td>
<td>Emotional lability or rapid mood changes</td>
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<td></td>
<td>of self and others</td>
<td>Lack of empathy or responsiveness to others emotions</td>
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<td>Egocentricity or focus on self -may seem self-centered</td>
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<td>Impatience or low tolerance of others</td>
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<td>May want needs met immediately and have difficulty waiting</td>
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<td></td>
<td>Regulation of emotional state</td>
<td>Irritability &amp; anger</td>
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<td>Anxiety &amp; depression</td>
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**Resources**