



**BRAIN INJURY  
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## **The Role of Processing Speed in Brain Injury Recovery**

*By Carol Tompkins*

Processing speed is critical to the understanding and formulation of speech for the brain-injured person. The speed at which a person takes in and acts upon information is also essential to social integration. However, it is one aspect of recovery following brain injury that is often overlooked—but one that is key to a successful rehabilitation program.

It is very common for someone who has suffered a brain injury to have difficulty recognizing the decreased speed at which he or she responds or speaks. In most cases, responses become “thoughtful responses” and automatic answers—those we give quickly, by habit—are minimized. For example, the questions “How old are you?”, “What is your shoe size?”, or “What is your telephone number?” would normally be answered in a few seconds. Questions requiring more thoughtful answers would be, “What is your opinion on using credit cards?” or “What is the best way to plan a vacation?”

Work on processing speed cannot begin until comprehension and memory have improved. The person must understand and recall information in order to participate in therapy. Approaches that elicit automatic responses could be used verbally. Twenty or thirty sentence completions are sufficient. In doing these tasks, the patient is informed that there are a few correct answers for each item. The goal is to decrease the time needed to provide a word to complete the sentences over several administrations. Time will improve as the person becomes acclimated to the task. Sentence completions that might be used include, “Close the \_\_\_\_\_.”, “Open the \_\_\_\_\_.”, or “Sit in the \_\_\_\_\_.”. Once familiar with the task, a person’s sentence completions can include his or her personal information, such as, “Your eye color is \_\_\_\_\_.”, or “Last year you vacationed in \_\_\_\_\_.”. To reinforce the increased processing speed, each task should always be followed by one that can be done quickly. In addition, because any therapy tool is only as useful as its application to real life, it is helpful for family members or caregivers to follow-up by asking questions that require an automatic response.

Processing speed can affect both listening and talking. If a person is slow to process information, engaging him or her in a conversation can be difficult because people tend to speak quickly and move on to new topics with ease. As a result, communication in everyday situations can be problematic and can hamper the transition into the community. Understanding the conversation at a dinner party, for example, can be a challenge if one is slow to process information. And, in turn, it would take longer to formulate speech. Therefore, there is a tendency among persons with brain injury to



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use verbal fillers (i.e., “you know,” “like”) or talk around a topic before really saying what is intended. Such increased difficulty in adapting language and communication to meet the needs of a specific social situation have been documented in research studies and clinical journals.

In fact, research conducted at Kessler Institute for Rehabilitation evaluated the changes in conversation following brain injury. Galski et. al. analyzed those changes and discourse as a measure of social integration and quality of life. The research found that persons with traumatic brain injury took more time for completion of a message in conversation. Decreased social integration or transition into the community was associated with more time for completion of the task. Discourse variables such as time for completion, sequencing and complexity of speech predicted social integration more strongly than age, education and other psychosocial factors. Therefore, processing speed should be an integral part of treatment and family education for brain injury patients.

### References

Galski, T., Tompkins, C., & Johnston, M.V. (1998). Competence in discourse as a measure of social integration and quality of life in persons with traumatic brain injury. *Brain Injury*, 12.

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