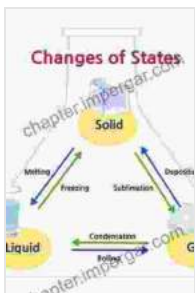


Working Memory: The State of the Science

Working memory is a cognitive system that allows us to hold information in mind for short periods of time. It is essential for a variety of cognitive tasks, such as reasoning, problem-solving, and language comprehension.

Working memory has been the subject of extensive research over the past few decades, and our understanding of this system has grown considerably. This book provides a comprehensive overview of the current state of the science on working memory. It covers the different components of working memory, the different models of working memory, and the different ways that working memory can be assessed.

Working memory is typically thought of as having three components: phonological store, visuospatial sketchpad, and central executive.



Working Memory: The state of the science by Nelson Cowan

★★★★★ 5 out of 5

Language	: English
File size	: 24880 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Word Wise	: Enabled
Print length	: 453 pages
Lending	: Enabled



- **Phonological store** is a temporary store for verbal information, such as words and numbers.

- **Visuospatial sketchpad** is a temporary store for visual and spatial information, such as images and maps.
- **Central executive** is the control center of working memory. It is responsible for managing the flow of information into and out of working memory, and for carrying out cognitive operations on this information.

There are a number of different models of working memory that have been proposed over the years. The most widely accepted model is the Baddeley and Hitch model, which was first proposed in 1974. This model proposes that working memory consists of the three components described above, as well as a long-term memory component.

Other models of working memory include the Cowan model, the Engle model, and the Just and Carpenter model. These models differ from the Baddeley and Hitch model in a number of ways, but they all share the basic idea that working memory is a limited-capacity system that is responsible for holding information in mind for short periods of time.

There are a number of different ways to assess working memory. One common method is to use a **span task**. In a span task, participants are presented with a list of items and asked to recall them in the same order. The span task can be used to assess the capacity of working memory, as well as the efficiency of the phonological loop.

Another common method for assessing working memory is to use a **working memory updating task**. In a working memory updating task, participants are presented with a list of items and asked to update some of the items in the list. This task can be used to assess the ability of working

memory to hold information in mind while also performing other cognitive operations.

Working memory develops gradually throughout childhood and adolescence. The capacity of working memory increases with age, as does the efficiency of the phonological loop and the central executive.

The development of working memory is influenced by a number of factors, including genetics, environment, and education. Children who grow up in poverty are more likely to have difficulties with working memory than children who grow up in more advantaged homes. Children who receive a good education are also more likely to have strong working memory skills.

Working memory can be impaired by a variety of factors, including head injury, stroke, and dementia. Working memory impairment can also be caused by certain psychiatric disorders, such as schizophrenia and attention deficit hyperactivity disorder (ADHD).

The impairment of working memory can have a significant impact on cognitive functioning. People with working memory impairment may have difficulty with reasoning, problem-solving, and language comprehension. They may also have difficulty paying attention and controlling their behavior.

There are a number of different treatments that can be used to improve working memory impairment. These treatments include cognitive training, medication, and lifestyle changes.

Cognitive training is a type of therapy that can help people to improve their working memory skills. Cognitive training programs typically involve a

series of exercises that are designed to improve the capacity and efficiency of working memory.

Medication can also be used to improve working memory impairment. Some medications, such as methylphenidate, have been shown to increase the levels of dopamine in the brain. Dopamine is a neurotransmitter that is involved in attention and working memory.

Lifestyle changes can also help to improve working memory impairment. Getting enough sleep, eating a healthy diet, and exercising regularly can all help to improve cognitive functioning.

Working memory is a complex and essential cognitive system. It plays a vital role in a variety of cognitive tasks, and it develops gradually throughout childhood and adolescence. Working memory can be impaired by a variety of factors, including head injury, stroke, and dementia. However, there are a number of different treatments that can be used to improve working memory impairment.

This book provides a comprehensive overview of the current state of the science on working memory. It covers the different components of working memory, the different models of working memory, and the different ways that working memory can be assessed. It also discusses the development of working memory, the impairment of working memory, and the treatment of working memory impairment.

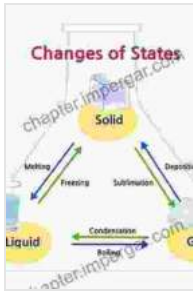
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