Understanding Working Memory (2nd Edition) **Tracy Packiam Alloway and Ross G. Alloway. Pp 155 (Pbk). London: SAGE 2015 ISBN 978-1-4462-7421-7**

Understanding Working Memory is the second edition of the book first published in 2011 under the title of *Improving Working Memory.* Tracy and Ross Alloway are established researchers, authors and practitioners in the area of working memory. They have developed tools to measure working memory including the Automated Working Memory Assessment (AWMA) and also tools to improve it such as *Jungle Memory.   Jungle Memory* can be found at http://junglememory.com and is "scientifically proven to boost learning outcomes for students with learning difficulties", and "improves IQ, working memory, and grades" (Jungle Memory, 2015)

Understanding Working Memory consists of nine chapters. The first defines and explains working memory and the second looks at how it is diagnosed. Chapters three to eight discuss working memory and its relation to a range of learning and behavioural disorders: dyslexia, dyscalculia, developmental coordination disorder (dyspraxia), ADHD, ASD and anxiety disorders.   The final chapter, *Student strategies and training,* focusses on how students can support themselves. There is also an epilogue written by a school psychologist of her experience of setting up a working memory assessment and support programme, and an appendix which handily summarises the different support strategies described throughout the book.

The first chapter describes Working Memory in an easy to understand way. This book does not provide an in-depth theoretical analysis of the model or put the working memory model in the context of other theories of memory.   For example, the description given does not refer to the work of Baddeley and Hitch (1974) in developing the theory of working memory or the refinements made to it since. Therefore, the book is not aimed at the student of Cognitive Psychology who is looking for an in-depth understanding of theories of memory. Rather, it is aimed at the teacher who wishes to gain an insight into how problems their student face can be related to working memory.

The second chapter discusses how working memory deficits can be diagnosed using the standardised tests devised by the authors. It gives a description of various tests and some examples of questions used. An appendix with more examples of test questions would have been a useful addition, however a free AWMA demo can be easily found on-line. There is also an evaluation of the test in terms of validity and reliability and a comparison is made between working memory and IQ testing, with

research showing that working memory scores are a better predictor of academic achievement.

Each of the chapters three to eight follow the format of beginning with an engaging description of a student with the disorder that the chapter focusses on, followed by a description of the disorder and the diagnostic criteria for that disorder set out by the *Diagnostic and Statistical Manual of Mental Disorders, 5th edition,* known as DSM-5. Particularly good are the sections that give the reader exercises to allow them to empathise with somebody with that disorder. The format of the chapters then moves on to look at the evidence of how the disorder relates to brain functioning and then examines the working memory profile of those with that disorder. Most useful to practitioners are the strategies, both general and specific, that can be used to help support those they work with. Each chapter ends with two case studies of students who struggled and the strategies that worked for them.

The main strength of this book is that it makes a convincing case that many students who perform badly at school have working memory problems and that more screening should be done in schools. The Alloways' research has found that 10-15% of students have working memory problems but very few of them are identified. It is shown how having a poorly functioning working memory can make school unnecessarily stressful for such students. For example, Chapter 1 begins with the case of Andrew, aged 6, who began school full of enthusiasm but throughout the year became more frustrated as he struggled to follow instructions. There are several examples of how such children drift into the bottom sets and are often labelled lazy or daydreamers. The book gives clear strategies to use to support students, many of which can be implemented by teachers with little extra planning, for example breaking down instructions or shortening activities to reduce working memory processing.

Understanding Working Memory will be useful for anybody who wants to gain an insight into working memory and how it relates to a range of disorders, but specifically it provides an excellent tool for teachers and other practitioners who wish to help the young people they work with. The authors' enthusiasm for the subject and optimism that all students can be helped to achieve their potential is infectious.

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References

Baddeley, A.D., & Hitch, G. (1974). Working memory. In G.H. Bower (Ed.) *The psychology of learning and motivation: Advances in research and theory* (Vol. 8, pp. 47–89). New York: Academic Press.

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