The Assessment, Evaluation and Rehabilitation of Everyday Memory Problems

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This volume of self-selected papers recognises Professor Barbara A. Wilson’s major contribution to the study of neuropsychology. Published over a 25-year period, the papers included here address the assessment, treatment and evaluation of rehabilitation provided to people who have memory difficulties arising from an injury or illness affecting the brain.

This selection of papers includes work on errorless learning, the natural history of the development of compensatory memory systems, paging systems developed to enhance independent daily living for memory impaired people and single-case experimental designs to appraise the response of individual patients. The final section includes a practical framework for understanding compensatory behaviour, a model of cognitive rehabilitation and a discussion of the dilemmas created by the different aims of neuroscience as opposed to those of clinicians.

This book will be of great interest to clinical psychologists, neuropsychologists, occupational therapists and speech and language therapists, along with anyone who is interested in reducing the impact of memory problems on people who have suffered brain injury.

**Barbara A. Wilson** is a clinical neuropsychologist who has worked in brain injury rehabilitation for 35 years. She has won many awards for her work including an OBE in 1998 and two lifetime achievement awards. Her publications include 19 books, over 270 journal articles and chapters and eight neuropsychological tests. She is the editor and founder of the journal *Neuropsychological Rehabilitation*, and in 1996 she founded the Oliver Zangwill Centre for Neuropsychological Rehabilitation.
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Selected papers of Barbara A. Wilson

Barbara A. Wilson
I dedicate this book to my husband, Michael Wilson, for his constant encouragement and support throughout our marriage of 51 years (so far).
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Contents

Acknowledgements ix
Introduction: the assessment, evaluation and rehabilitation of everyday memory problems over 25 years xi

PART I
Assessment 1

1 Frontal amnesia and the dysexecutive syndrome (1988) 3
ALAN BADDELEY AND BARBARA A. WILSON

2 The development and validation of a test battery for detecting and monitoring everyday memory problems (1989) 20
BARBARA A. WILSON, JANET COCKBURN, ALAN BADDELEY AND ROBERT HIorns

3 How does post-traumatic amnesia differ from the amnesic syndrome and from chronic memory impairment? (1992) 35
BARBARA A. WILSON, ALAN BADDELEY, AGNES SHIEL AND GARY PATTON

PART II
Treatment 47

4 When implicit learning fails: amnesia and the problem of error elimination (1994) 49
ALAN BADDELEY AND BARBARA A. WILSON

5 Errorless learning in the rehabilitation of memory impaired people (1994) 66
BARBARA A. WILSON, ALAN BADDELEY, JONATHAN EVANS AND AGNES SHIEL

6 Coping with amnesia: the natural history of a compensatory memory system (1997) 84
BARBARA A. WILSON, JC AND EVIE HUGHES
7 Reducing everyday memory and planning problems by means of a paging system: a randomised control crossover study (2001) 96
BARBARA A. WILSON, HAZEL C. EMSLIE, KIRSTEN QUIRK AND JONATHAN J. EVANS

8 What is the locus of the errorless-learning advantage? (2006) 108
MIKE PAGE, BARBARA A. WILSON, AGNES SHIEL, GINA CARTER AND DENNIS NORRIS

9 A 10-year follow up of a paging service for people with memory and planning problems within a healthcare system: how do recent users differ from the original users? (2011) 128
MARIA MARTIN-SAEZ, JOE DEAKINS, RACHEL WINSON, PETER WATSON AND BARBARA A. WILSON

PART III
Evaluation 141

10 Single-case experimental designs in neuropsychological rehabilitation (1987) 143
BARBARA A. WILSON

11 Long-term prognosis of patients with severe memory disorders (1991) 160
BARBARA A. WILSON

PART IV
Theories, models and frameworks 177

12 A practical framework for understanding compensatory behaviour in people with organic memory impairment (1996) 179
BARBARA A. WILSON AND PETER C. WATSON

13 Towards a comprehensive model of cognitive rehabilitation (2002) 200
BARBARA A. WILSON

14 The clinical neuropsychologist’s dilemma (2005) 213
BARBARA A. WILSON

Index 224
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Introduction

The assessment, evaluation and rehabilitation of everyday memory problems over 25 years

I have been interested in the rehabilitation of disorders of memory since 1979 when I began work at Rivermead Rehabilitation Centre in Oxford. Before that I had been employed at Hilda Lewis House at Bethlem Royal Hospital on the outskirts of London where I worked with severely learning disabled children. My colleagues at Hilda Lewis were guided by a work ethic that maintained that it was our responsibility to ensure that the children’s problems were reduced: if the children did not learn or improve then it was the fault of the psychologist, therapist or teacher and another way had to be found to ease the difficulties we encountered. When I moved to Rivermead to work in neuropsychological rehabilitation of people with brain injury, a commonly held view at national and international level, thankfully not shared by Rivermead staff, was that a patient could not learn because she or he had an impairment (for example, hippocampal damage or frontal lobe lesions). Following on from this assumption was the implication that the neuropsychologist was not responsible for dealing with the patient’s problems. This was contradictory to my training and experience at Hilda Lewis and I have always argued that no patient is untestable or untreatable. However severe the patient’s difficulties, there is something we can do to reduce the impact of these on everyday life.

Rivermead was my apprenticeship in brain injury rehabilitation. I joined a team of experienced physiotherapists, occupational therapists and speech and language therapists. There had been a very good clinical psychologist there, Dr Nadina Lincoln, and it was her post I was filling. No one at Rivermead was dealing with memory difficulties so, almost by default, I began to specialise in this area. I always worked closely with the other therapists and enjoyed participating in joint programmes such as those dealing with reading problems in collaboration with the speech and language therapist; or visual perceptual deficits with the occupational therapists, motor problems with the physiotherapists, or behaviour problems with all the staff. Memory problems, however, became more and more my special domain.

Cognitive rehabilitation programmes were beginning to be introduced at this time, and Diller in New York (1976) was the first person to set up a programme actually called ‘Cognitive Rehabilitation’. Such programmes usually gave patients a set of exercises to work through. The rationale was that these would remediate
the underlying deficit or teach the patient how to deal with cognitive problems. Not only did early programmes follow this approach, some still believe this is the way to carry out cognitive rehabilitation (Oltra-Cucarella in press). I would maintain that this approach shows little evidence of achieving its goal of improving cognitive function (e.g. Robertson 1990; Sloan & Ponsford 1995); although, of course, it is usual for people to improve on the actual tasks or exercises they practise. More recently, there has been some success with attention (Cicerone et al. 2011) and language disorders (Tallal et al. 1998) and with improving working memory (Klingberg et al. 2005). To date, however, no studies have shown improvement of episodic memory functioning through exercises or training regimes. Another underlying weakness in those programmes that pursue cognitive rehabilitation through exercise is that typically they do not address the emotional, social and behavioural consequences of cognitive impairment caused by an insult to the brain; nor do they, as a rule, plan for generalisation or transfer of learning to the real world.

In the late 1970s when I started trying to help people with organic memory deficits, there were very few published papers or chapters on memory rehabilitation and the few available tended to teach lists of words—which are not what memory impaired people need to know. Some tried to teach mnemonics (for example Gianutsos and Gianutsos 1979) in the hope that this would generalise to real life difficulties but none were inherently concerned with reducing the impact of memory problems on everyday life. My first published paper on memory rehabilitation was concerned with teaching people's names to a man who had a left temporal lobe tumour removed (Wilson 1981). This man was embarrassed that he could not recall the name of his neighbour as well as those of the staff and patients at the rehabilitation centre. We chose the names he wanted to learn, used a visual imagery procedure to teach them and used a single-case experimental design (multiple baseline across behaviours) to determine whether the approach was successful. It was and he learned all 10 names selected despite not learning during the baseline periods.

Although not all my papers have dealt with real life difficulties experienced by survivors of brain injury (e.g. Wilson 1982), I have as far as possible, for the sake of relevance, tried to concentrate on those problems which are troublesome to survivors as they progress from day to day. Sometimes one needs to ask a particular question which has to be answered in a more traditional experimental manner (see Baddeley and Wilson 1994 reproduced in this volume for example) but nevertheless the results should be applicable to real life problems. Following the striking results from this experiment where every one of the people with amnesia learned more under the errorless condition, the next step was to confirm that the principle could be applied to real life problems (see Wilson et al. 1994 reproduced in this volume).

Rigorous assessment has to be conducted before we can design treatment programmes for memory impaired individuals. As well as understanding the nature and degree of severity of memory problems an individual might have, we also need to know what aspects of memory might remain intact for that person. Our assessments should inform us as to whether there are additional cognitive
Introduction

problems, whether there are emotional difficulties impacting on the memory problems and so forth. Many standardised tests are available for neuropsychologists to help answer these questions and we can supplement these tests with behavioural measures to determine how the problems manifest themselves in real life. For more detail see Wilson (2009, chapter 3). We may also wish to know if the person we are assessing has a typical amnesic syndrome or not. R.J., for example, was one of the first people to be described with an amnesic syndrome together with a dysexecutive syndrome (Baddeley and Wilson 1988, reproduced in this volume). Baddeley had first used the term dysexecutive syndrome (DES) two years earlier (Baddeley 1986); and in 1988 we used the term for the first time to describe an amnesic patient with the DES. There are different types of memory impairment and in 1992 we reported on the differences between people in post traumatic amnesia, the amnesic syndrome and chronic memory impairment (Wilson et al. 1992 reproduced in this volume).

Given my interest in the everyday problems of memory impaired people, I wanted a test that would predict real life difficulties and this is why I started working on the Rivermead Behavioural Memory Test (Wilson et al. 1985; Wilson et al. 1989 reproduced in this volume). The test was published in 1985 and the paper on the development and validation appeared in 1989. The test began life soon after I started work at Rivermead. As a novice I would go to ward rounds and make observations such as, “She is below the first percentile on this test” or “he is two standard deviations below the mean on this test.” The occupational therapists present would sigh and say, “But can she go back to work?” or “Is he safe to go home?” I realised that the tests available to me did not answer such questions so I started to think about developing a practical test that might address some of these very real issues. A further impetus came when I decided to evaluate a memory group I was organising and I needed four parallel versions of a measure to use in the study. In cooperation with Alan Baddeley, we used some data from a study he was working on with Alan Sunderland and John Harris (Sunderland et al. 1984) to help determine which items to include in the test. We also asked therapists to note down the memory failures observed in their sessions. We were able to obtain a research grant, employed Janet Cockburn to collect the data, and five years later the Rivermead Behavioural Memory Test was published (Wilson et al. 1985). We included 80 brain-injured patients, each of whom were observed by their therapists for between 30 and 55 hours. The correlation between therapists’ observations of everyday memory failures and scores on the RBMT was a highly significant 0.75 (Wilson et al. 1989).

A long-term follow-up study of 43 memory-impaired people seen 5–10 years earlier (Wilson 1991 reproduced in this volume) showed that RBMT scores both at the end of rehabilitation and at follow-up were good predictors of independence (operationally defined as in paid employment and/or living alone and/or in full-time education). Schwartz and McMillan (1989) demonstrated that the RBMT was a good predictor of employment in people with traumatic brain injury and Kotler-Cope (1990) found the RBMT was a better measure of everyday memory than the Wechsler Memory Scale—Revised (Wechsler 1987). Perez and Godoy (1998) also found the RBMT was as robust as the Wechsler for discriminating between patients
Introduction

and controls. The original test has been translated into 15 languages, a children’s version of the test appeared in 1991 (Wilson et al. 1991) and the latest version, the RBMT-3, was published in 2008 (Wilson et al. 2008). It has proved a clinically useful test for predicting everyday memory problems and provides complementary information to the more traditional neuropsychological memory assessments which can inform us of more theoretical aspects of memory functioning such as immediate and delayed memory, verbal and non-verbal memory and recall and recognition. The RBMT can predict whether a person is likely to have everyday memory problems but we need a more behavioural or functional approach to identify the specific problems to target in rehabilitation. In my 2009 book, I discuss this in more detail (Wilson 2009). Since the RBMT was published, similar ecologically valid tests for other cognitive domains have been published. These include the Test of Everyday Attention (Robertson et al. 1994) and the Behavioural Assessment of The Dysexecutive Syndrome (Wilson et al. 1996).

Within the field of memory rehabilitation there would appear to be three main approaches we can employ to help improve daily functioning. The first is to modify the environment in order to reduce cognitive demands (e.g. labelling drawers and cupboards so people do not have to remember what is contained in them or avoiding a particular phrase that triggers an irritating response). The second is to teach or encourage the use of an external memory aid such as a wall calendar or personal organiser (this is one of the most productive approaches to memory rehabilitation and the most likely to lead to greater independence). The third is to help people learn more efficiently though spaced retrieval, vanishing cues or errorless learning (see Wilson 2009 for full discussion of each of these methods). In the past two decades, it is, perhaps, external aids and methods for improving learning that have been most beneficial in the rehabilitation of memory deficits. A natural history of the development of a compensatory memory system (Wilson et al. 1997b) is reproduced in this volume and tells how JC, a man with a severe amnesic syndrome, gradually built up his system and has been so successful at compensating that he lives alone and is self employed.

One of the best evaluated of the electronic memory aids is a paging system called NeuroPage, developed by a neuropsychologist and a British engineer living in California (Hersch & Treadgold 1999). NeuroPage works by programming reminder messages into a central computer which are then sent to the client’s pager at fixed times of the day. It was developed for Treadgold’s adult son who sustained a severe traumatic brain injury in a road traffic accident and who needed to return to college. Hersch and Treadgold were in the audience when I gave a workshop in San Francisco; they invited to me to their office to look at the system, which I liked, and so began a series of studies to evaluate the pager.

Following a pilot study (Wilson et al. 1997a), we carried out a randomised controlled trial (Wilson et al. 2001 reproduced in this volume) in which people were randomly allocated to pager first or waiting list first. Most of the 143 participants had memory or planning deficits due to acquired brain injury. Each chose what target behaviours they wanted to work on. Baselines were taken to monitor success. A relative or carer also monitored whether the target behaviour was
Introduction

achieved or not. The results showed that less than 50% of the target activities were completed without the pager and this rose to 76% with the aid of the pager. More than 80% of the participants were more successful at carrying out the tasks with the pager than without. We demonstrated that NeuroPage can reduce significantly the everyday failures of memory and planning in people with brain injury and that it is possible to combine theory, scientific methodology and clinical relevance. A review of electronic aids (de Joode et al. 2010) reports that the NeuroPage study is the only randomised control trial to have been carried out with electronic aids. Furthermore, it is one of the few studies to focus on real-life everyday targets selected by patients rather than using experimental or laboratory-type material such as remembering hypothetical goals. Since then another study, albeit with far fewer patients (N = 12), has been completed with Google Calendar (McDonald et al. 2011) and also using patient selected targets. With the rapid growth of new technology more and more external memory aids are likely to appear.

In 2002 Wilson and Evans discussed the cost implications of NeuroPage. They showed that for at least some of the clients, NeuroPage saved money for health and social services.

Particularly pleasing was that the 2001 study influenced clinical practice as our local health authority set up a clinical service for people throughout the United Kingdom and in 2003 we reported on the first 40 clients using this service (Wilson et al. 2003). We then completed a ten-year follow-up study showing how the service changed (Saez et al. 2011 reproduced in this volume). The main changes were: (1) that from 2007 people could choose to receive their messages via their mobile telephones (the younger people with TBI tended to choose mobile phones whereas the older people with other diagnoses tended to choose the pager); and (2) although messages connected with medication were by far the most frequent in both the early and late versions, there were differences in the types of messages sent. In the follow-up study more messages were sent regarding safety, managing mood and cognitive rehabilitation in general.

Particularly important in memory rehabilitation today is the principle of errorless learning, that is avoiding trial-and-error learning. Errorless learning developed from two distinct theoretical backgrounds. First there was errorless discrimination learning from behavioural psychology (Terrace 1963, 1966), which was soon utilized in developmental learning disability (Sidman & Stoddard 1967; Cullen 1976; Walsh & Lamberts 1979). The second development came from implicit learning (or learning without conscious recollection) from cognitive psychology (e.g. Brooks & Baddeley 1976; Graf & Schacter 1985). We know that people with amnesia can learn normally or nearly normally under some circumstances but that anomalies are sometimes seen. Patients may, for example, “get stuck on” an incorrect response. After considering the range of anomalies, Alan Baddeley and I posed the question “Do people with amnesia learn better if prevented from making mistakes while learning?” We carried out an experiment to answer this question and gave a stem completion task to three groups of people (young and elderly participants and people with very severe memory impairment). While the young and elderly control participants did a little better under the
Introduction

errorless learning condition, every single one of the 16 densely amnesic people did better when prevented from making mistakes. The conclusions to this study were: (1) errorless learning was more effective than errorful learning; (2) this advantage was greater for the people with amnesia; (3) the amnesic group showed less forgetting under errorless learning; and (4) we should not ask people with amnesia to guess. The results were so striking that I changed my clinical behaviour overnight. I never ask people with amnesia to guess now (unless I am giving a test where guessing is important). Instead I insist “only tell me if you are sure.”

The next step was to discover if the principle of errorless learning could be applied to real life tasks so in the same year we published a paper demonstrating that we could teach patients with severe memory impairment some practical tasks using errorless learning principles (Wilson et al. 1994 reproduced in this volume). It needs pointing out that when employing errorless learning principles, we need to ensure active participation and we need to incorporate other principles from learning theory and memory rehabilitation such as spaced retrieval and learning one thing at a time.

Since the publication of those early papers many researchers have used errorless learning to teach several everyday tasks to people from different diagnostic groups, different ages and at different times post insult. Errorless learning is superior to trial-and-error learning for people with severe memory problems. It is less clear whether it is effective for people with language problems (although see Lambon Ralph & Fillingham 2007). Lambon Ralph (personal communication) suggests that although people with language problems seem to benefit from both approaches, they prefer the errorless approach. Conroy and Lambon Ralph (2012) discuss this issue in more detail.

Why does errorless learning work? Baddeley and Wilson (1994) argued that errorless learning is dependent on implicit memory and this system is poor at eliminating errors: episodic memory is the system which does this. Furthermore, in order to benefit from our mistakes we need to be able to remember them. So if people whose episodic memory is almost non-existent (and who only have implicit memory functioning) make an incorrect response, this response may be strengthened. Implicit memory has no way of selecting a correct from an incorrect response. We demonstrated this in a series of experiments published in 2006 (Page et al. 2006 reproduced in this volume). We concluded that the locus of advantage in errorless learning is indeed implicit memory.

One of the problems we constantly face in rehabilitation is determining whether or not we are succeeding in our efforts. Because of the great heterogeneity of patients receiving rehabilitation and because of the variety of aims and methods required to achieve success, the measurement of treatment effectiveness is difficult to evaluate (Hart et al. 2008). As I have argued elsewhere (Wilson 2009), there is no point in attempting rehabilitation if it is not effective. In the medical world, randomised controlled trials (RCTs) are considered the gold standard for determining the efficacy of any treatment. In rehabilitation, RCTs are possible but they are not easy and need to be carefully thought out. One such study is included in this volume (Wilson et al. 2001). We cannot carry out double blind RCTs where
neither the person giving nor the person receiving the treatment knows whether “real” treatment or placebo control has been administered because psychologists and therapists have to be aware of what they are doing. It is possible to carry out a single blind RCT where one party is blind to what is happening. Some studies now use a “blind” assessor to rate a patient’s behaviour and the assessor does not know whether the patient has been treated or not (see Shum et al. 2011). There is, however, an increasing recognition that RCTs are not the only way to evaluate rehabilitation. Andrews (1991) argues that the RCT “is a tool to be used not a god to be worshipped.” He goes on to say that the RCT is excellent where (a) the design is simple, (b) marked changes are expected, (c) the factors involved are relatively specific, and (d) the number of additional variables likely to affect the outcome are few and can be balanced out. This is completely unlike the situation in rehabilitation. We can use a within subjects design where each patient is seen under two or more conditions or we can use a group study where we are looking at two or more groups under the same conditions. This is the design used in the Baddeley and Wilson (1994) study where we compared young non-brain damaged participants with elderly non-brain damaged and with densely amnesic participants. Frequently, however, we need to know whether an individual patient is benefiting from our intervention and this is where we can use one of the single-case experimental designs (SCEDs).

SCEDs were mentioned above. They came originally from behavioural psychology (Nelson and Hayes 1979) and are very valuable in evaluating an individual’s response to treatment. For every patient we see, we should ask ourselves, “Is this patient changing and, if so, is the change due to what we are doing (or have done) or would it have happened anyway?” Group studies can answer questions about groups: for example, “How many patients with amnesia benefit from an errorless learning approach?” (see Baddeley and Wilson 1994 in this volume). However, if we want to know whether the man or woman we are treating is benefiting from this approach (he or she might be one of the few who do not benefit) we have to look at the response of that particular person. The value of SCEDs is that they allow us to evaluate an individual’s response to treatment, to see if there is change over time, and to find out whether any changes are due to natural recovery or to the intervention itself. In other words, we can tease out the effects of treatment from the effects of spontaneous recovery and other non-specific factors. Given that rehabilitation is planned for individuals, evaluation should take place at the individual as well as the group level. My first paper on the use of SCEDs in rehabilitation (Wilson 1987) is reproduced in this volume. Since that paper, the importance of SCEDs has been increasingly recognised. This is, in large part, due to the work of Tate, Perdices and others in Sydney Australia. In 2008 and 2009 they published a scale for evaluating the methodological quality of SCEDs (Tate et al. 2008; Perdices et al. 2009) which lists 11 areas which should be included or addressed in any SCED. This was later refined and extended to 14 areas (Tate et al. in press). The value of SCEDs is recognised in the Medical Research Council’s guidelines on complex interventions. These were developed to address the limitations of RCTs in evaluating psychological and behaviour change in public health interventions.
The final area I want to concentrate on in this introduction is the importance of theories, models and frameworks. A theory can be regarded as “a supposition or system of ideas explaining something, especially one based on general principles independent of the particular thing to be explained” (OED). A model is “a representation that can help us to understand and predict related phenomena” (Baddeley 1992) while a framework is a basic structure underlying a system or concept. In rehabilitation, models, theories and frameworks are useful for facilitating thinking about assessment and treatment, for explaining deficits to therapists, relatives and patients, and for enabling us to conceptualise outcomes. In rehabilitation we need to draw on a number of models and theories and frameworks or we risk bad clinical practice. Survivors of brain injury are likely to have several cognitive problems particularly with attention, memory, executive functions, word finding and slowed information processing. In addition, they are likely to have non-cognitive problems such as anxiety, depression, social skills deficits and so forth so no one model, theory or framework can address all of these problems. Some of the main models and theories which have influenced modern rehabilitation are those of cognitive functioning, learning, emotion, assessment, recovery, plasticity and compensation. There are, of course, many others. The three papers on this subject I have chosen to include here are first, a practical framework for understanding the compensatory behaviour of memory impaired people (Wilson and Watson 1996); second, a more complex model of cognitive neuropsychological rehabilitation (Wilson 2002); and third, the problem with theories that often claim to be relevant but in practice may not be (Wilson 2005). The Wilson and Watson (1996) paper is based on a framework proposed by Bäckman and Dixon (1992), who distinguish four steps in the evolution of compensatory behaviour: (a) origins, (b) mechanisms, (c) forms and (d) consequences. Although this framework is useful in understanding compensation in neurologically impaired adults, other factors need to be taken into account, in particular age, severity of memory impairment and additional cognitive deficits. The second paper (Wilson 2002) is an attempt to show the complexity of neuropsychological rehabilitation and was produced to refute those who believe that all one needs to inform and guide satisfactory cognitive rehabilitation is a specific theory: for example, that of language. In this paper I aim to show that such a theory is not sufficient. It might tell us what aspects of language are not functioning well but it cannot inform us as to how to treat those areas—or even whether these are the areas that need to be rehabilitated. Real life problems are our concern in rehabilitation, such as failure to use a telephone or not being able to hold a conversation or not being able to take medication independently. The third paper, the clinical neuropsychologist’s dilemma (Wilson 2005), reflects on which theory or theories are most relevant and useful for the patients and families with whom they work. Because of the enormous interest and financial support for neuroimaging, neuroplasticity and animal models of brain injury, many clinical neuropsychologists consider cognitive neuroscience to be of direct or indirect benefit to clinical neuropsychological practice. However, the benefits are less substantial than is sometimes claimed and when treating a patient with brain injury it is sometimes a struggle to implement, or even see the relevance
of findings from cognitive neuroscience. Rehabilitation is a two way interactive process whereby a person with brain injury works together with professional staff and others to reduce the impact of his or her problems in everyday life, and to achieve optimum physical, psychological, social and vocational well-being for that brain injured person.

Finally, I would like to ask how is memory rehabilitation likely to change in the future? I believe that there will be more technological advances and sophisticated compensatory aids, more sophisticated assessment procedures, combined treatments between pharmacology and neuropsychological rehabilitation, and better evaluation of rehabilitation programmes. The biggest challenge we face, however, is to persuade the purchasers of health care that rehabilitation makes clinical and economic sense. There is plenty of evidence for this. Cicerone et al. (2011) found there is substantial evidence to support interventions for attention, memory, social communication skills, executive function, and for comprehensive-holistic neuropsychologic rehabilitation after TBI. In their words: “Comprehensive-holistic neuropsychologic rehabilitation is recommended to improve post acute participation and quality of life after moderate or severe TBI” (p. 526).

The published papers are grouped into four areas which I consider to be of particular importance. They are: assessment, treatment, evaluation and theories, models and frameworks.

References


Introduction


healthcare system: How do recent users differ from the original users? Neuropsychological Rehabilitation, 21, 769–783.


Introduction


Part I

Assessment
1 Frontal amnesia and the dysexecutive syndrome (1988)

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In a recent review of neuropsychological studies of the frontal lobes, Stuss and Benson (1984) discuss the influence of frontal lobe damage on a range of cognitive functions. The section on memory is brief, and inconclusive. While they point out that there is evidence that frontal lobe damage may impair delayed response tasks in monkeys (Jacobsen, 1936) there is considerable controversy as to whether the deficit is one of memory, or is produced by some secondary factor such as greater distractibility.

The evidence from human neuropsychological studies is similarly equivocal; Hecaen (1964) reported deficits in verbal learning, while Corkin (1965), Milner (1965), and Walsh (1960) all reported deficits in maze learning by frontal lobe patients. Impaired judgment of recency is also reported by Milner (1971; 1982), and by Ladavas, Umilta, and Provinciali (1979). As in the case of the animal studies however these apparent memory deficits have been attributed to secondary factors rather than a primary amnesia. In particular, frontal patients tend to demonstrate perseveration and lack of initiative, both of which would be likely to interfere with performance on memory tasks. Similarly, Luria (1971, 1973) and Hecaen and Albert (1978) have suggested that the memory deficits may stem from attentional problems in frontal lobe patients, a view that is also advocated by Stuss, Kaplan, Benson, Weir, Chiulli, and Sarazin (1982) who observed apparently normal learning in patients who had undergone prefrontal leucotomy many years earlier; such patients did however show an excessive sensitivity to the effects of subsequent interference. Stuss and Benson summarized their conclusions as follows:

These cumulative observations suggest that frontal damage does lead to disturbed function on formal memory tests, and that the frontal memory problems differ distinctly from temporal or diencephalic amnesias. Details of this difference remain vague, however, and much work needs to be done to isolate the role of the frontal lobe in the overall memory function.

(Stuss & Benson, 1984, pp. 16–17)

We propose to discuss a case of frontal lobe amnesia, describing in some detail the nature of the amnesic deficit, using tasks that have been developed in connection with the study of the more classic amnesic syndrome. Following this we