A Portfolio of Study, Practice and Research; Submitted for the Doctorate of Psychology (PsychD) in Clinical Psychology Conversion Programme; University of Surrey.

Research Title; Staff Attributions for Aggression and the Acceptability of Psychological Treatments in Brain Injury Rehabilitation.

David Manchester

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Summary of the whole programme

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Professional Dossier

Service Development. The development of a specialist neurobehavioural rehabilitation service that was developed in New South Wales, Australia is described. This service was designed to meet the needs of a client who displayed severe prolonged behavioural disturbance following traumatic brain injury, and whose behaviour seriously challenged the ability of existing services. Its philosophy was based on the principles of applied clinical neuropsychology and clinical psychology. The paper details the development of the service from the time of the original tender for funding, through the advertising and recruitment of staff, the admission of the client SA, subsequent behavioural analyses and interventions, through to discharge and outcome evaluation. It discusses the need for this type of service approach and addresses common criticism of such services.

Curriculum Vitae. This details professional positions held since qualifying in clinical psychology in 1991 and professional affiliations. It also outlines ongoing conferences attended.
Academic Dossier

Critical Review 1. This paper critically reviews the use of neuroleptic medication in the learning disabled population. It considers the high prevalence for this type of prescribing found in this client group in the absence of psychiatric diagnoses, and discusses possible reasons for this practice. In addition it considers the possibility that this type of prescribing may actually increase as persons with learning disabilities move from large institutional based care, into more community based residential settings. Procedures that may help reduce unnecessary medication use are also discussed.

Critical Review 2. This paper reviews the evidence supporting the ability of common tests of executive function to identify correctly those with and without frontal brain injury, and also predict real world behaviour. Recent developments in executive testing in the United Kingdom are considered, and more recent tests are examined to determine if they are advances upon their predecessors. Difficulties inherent in the office-based assessment of executive functioning are discussed, and additional methods to increase the validity of assessment in this area are suggested.
Research Dossier

Title. Staff attributions for aggression and the acceptability of psychological treatments in brain injury rehabilitation.

The acceptability of treatment approaches to those staff expected to implement treatments is considered to play a crucial role in determining whether or not a treatment is applied properly. In learning disability and child clinical psychology direct care staff, parents, and teachers have all been found to rate non-aversive procedures as more acceptable than aversive procedures. Aversive procedures tend to be considered most acceptable for aggressive and disruptive behaviours. This study sought to determine the acceptability to 113 brain injury rehabilitation staff of different types of treatment for aggression in a client with a brain injury. In addition, the prevalence of different types of attributions staff make to explain aggression were examined. Finally, the relationship between attributions and subsequent treatment acceptability was investigated.

Supervisor. Dr Mick Finlay, Lecturer, Psychology Department, University of Surrey.
Professional Dossier
THE DEVELOPMENT OF A NEUROBEHAVIOURAL REHABILITATION SERVICE FOR PROLONGED, SEVERE BEHAVIOURAL DISTURBANCE FOLLOWING TRAUMATIC BRAIN INJURY

David Manchester
2002
INTRODUCTION

At the end of 1994 the New South Wales Department of Health in Australia identified the need for a specialised unit for people with a brain injury who exhibited aggressive and violent behaviour at such a level that they could not be cared for in standard rehabilitation programmes and who were not mentally ill as defined by the Mental Health Act. An interim unit based on the principles of neurobehavioural rehabilitation was opened in the grounds of Lidcombe Hospital. In January 1995 the first patient (SA) was admitted and a neurobehavioural approach was taken to his management. Following intervention weekly aggression decreased from a peak of 159 incidents to zero after ten months. Other maladaptive behaviours also decreased markedly. Simultaneous attempts to improve adaptive behaviours were successful. This article discusses the development of the service, and the need for specialised units dealing with severe behavioural problems following brain injury. It presents the case of SA the first patient admitted to the unit, and addresses some of the more common criticisms of such environments.

Background

In 1994 brain injury rehabilitation services in New South Wales, Australia, were organised around three sub acute brain injury rehabilitation units. These units were medically oriented wards within large general hospitals. Patients requiring further rehabilitation following discharge from acute wards were admitted to the BIRUs for ongoing multidisciplinary assessment and treatment. Each rehabilitation team was headed by a physician in rehabilitation medicine, and consisted of clinicians in physiotherapy, occupational therapy, speech and language therapy, clinical psychology, neuropsychology and social work. Day to day care was provided by general trained nursing staff.
In 1994 a patient (SA) on one of these BIRUs was engaging in aggression at such a level that it became clear the general ward environment could not manage him safely. SA was 23 years old when he sustained a severe brain injury in a motor vehicle accident at the end of 1993. He made a good physical recovery and was discharged to the BIRU seven weeks post injury. So great was his aggression over the next year that two brain injury units which were well used to extreme behavioural problems following traumatic brain injury (TBI) considered themselves unable to manage him. Similarly, a locked psychiatric ward could offer him only custodial care with high levels of psychotropic medication and the enforced use of seclusion as necessary.

In all these settings SA continued to present a profound risk over the next thirteen months to other patients and their relatives, as well as to his own family members who continued to visit him regularly. Other patients (often confused or bedridden) were frightened by him. He was himself at risk from the retaliatory behaviour of others. His aggression meant that he was effectively excluded from rehabilitation. For the majority of time in both units he was managed with various sedating medication for behavioural purposes, and with seclusion.

With no significant change in his behavioural or emotional state his care was shared between the BIRU and the locked ward of the local psychiatric hospital. In all he was admitted to the secure unit seven times over thirteen months and remained there for a total of 216 days. The primary purpose of these admissions became to provide staff with respite. Other possible placements including a forensic psychiatry ward were not suitable, and in any case previous admissions there had broken down. There was increasing agitation by the family at the political and ministerial level. In addition, nursing staff at both hospitals were threatening industrial action if they were asked to continue to care for SA because of the significant risk he was deemed to pose to staff. All services involved in his care declared themselves unable to manage him and although the need for specialised units is recognised in Australia (Burke 1995), were unable to locate an appropriate service for him. The
NSW Health Department was instructed by the Ministers office to provide an appropriate service for this individual, and extra funding was made available. The three brain injury units were asked to tender a proposed service.

The proposed development of a service based on clinical psychology. In 1994 Lidcombe Hospital brain injury unit had a long and distinguished record of rehabilitation service provision and research. This has continued to the present day with the unit having relocated to Liverpool Hospital. In 1994 however, the unit was no more suited to accommodate patients with behavioural disturbance as extreme as SA as either of the other two services. As the unit Clinical Psychologist I was asked by the Director of the Brain Injury Service (Dr Adeline Hodgkinson) to review the relevant literature and to provide a proposed service design that could meet the needs of patients with severe prolonged behavioural disturbance following traumatic brain injury (TBI).

The service design proposal that I submitted to the Department of Health along with Dr Hodgkinson, was based on clinical psychology literature demonstrating effective rehabilitation of this client group utilising psychological principles of assessment, learning, and behaviour change. The following rationale was provided in the tender.

It is well established that behavioural and emotional/cognitive problems are common sequelae of Traumatic Brain Injury (TBI) (Dikmen, Machamer, and Temkin 1993; Tate 1987; Thomsen 1988; Miller 1990). The diffuse pattern of insult following TBI can lead to a variety of disorders of behaviour, including behavioural excesses such as aggression, impulsivity, and disinhibition, and various behavioural deficits including amotivation and adynamia. Compounding these difficulties are the often concomitant neuropsychological problems of diminished insight and impaired cognitive functioning. Whilst there are no exact figures detailing the incidence of severe behavioural disturbance in NSW following Traumatic Brain Injury (TBI), regional brain injury centres estimate that of the approximately 5000 patients admitted to hospital following TBI each year, as many as 50 will present with
behavioural difficulties of such severity that they require specialised care that
cannot be provided in standardised rehabilitation facilities (Marosszeky and Martin
1994). For the small but significant number of patients who remain profoundly
disturbed following their emergence from Post Traumatic Amnesia (PTA), the risk
they present to themselves, other patients and staff, often means that they are
excluded from active rehabilitation (Gloag 1985, Wood 1987).

It is commonly accepted that such patients, especially those unable to look after
themselves, gravitate towards psychiatric and developmental disability wards,
and/or nursing homes (Gloag 1985, Wood 1981, 1987). This is not because such
placements are seen as appropriate, but because other settings do not command
the skills and resources necessary to cope with the behaviour disorders stemming
from brain injury. Given that most recovery following TBI occurs within the first 12
months post injury, this effectively means that during the period within which most
gains might be expected the patient with severe behavioural problems is least likely
to be receiving any structured rehabilitation. In New South Wales the only option
available to people who present with extreme aggression on the ward following a
brain injury is admission to a psychiatric hospital.

People with severe behavioural problems present challenges to rehabilitation and
care agencies regardless of aetiology (eg brain injury, psychiatric illness,
developmental disability). Literature and experience suggests that in the absence
of specialised units or intensive support services such patients tend to be managed
either with medication (Sachdev 1991, Manchester 1993), or regimens utilising
seclusion/time out or physical restraint. Often the management approaches are an
ad hoc combination of all these. Usually behavioural difficulties are contained or
exacerbated rather than decreased, and a natural consequence can be that the
patient takes on aversive properties for staff caring for them and vice versa. The
financial burden of care can also be enormous. In the case of brain injury, given
that most sufferers are young men between the ages of 15 and 24 years (Anderson
and McLaurin 1980) whose life expectancy following injury will probably be normal
(London 1967) the cost of secure institutional care over 40 to 50 years can run to millions of dollars. The emotional impact on family cannot be quantified but few would argue with the claim that it is considerable (Oddy, Humphrey and Ottley 1978; Brooks, Campsie, Symington, Beattie and McKinlay 1986). Indeed it is behavioural rather than physical change following TBI that contributes most to family distress long term (Brooks, Campsie, Symington, Beattie and McKinlay 1987).

Specialist units do have their critics (Emerson, Toogood, Mansell, Barrett, Bell, Cummings and McCool 1987; Martin 1991). Among the criticisms levelled at such units is the fact that bringing together clients with behavioural difficulties all under the one roof creates an aversive and detrimental environment. Also, such units are least like the community to which the individual is expected to return to; and behaviour change is best brought about in the home environment. Finally, behaviour change that is achieved in such units is unlikely to generalise beyond the specialised environment. Despite these criticisms specialist units in England have been set up for the assessment and multidisciplinary management of people with significant behavioural disturbances in brain injury, developmental disability, and forensic psychiatry (Wood 1987; Murphy, Holland and Fowler 1991, Bullard and Bond 1988). By offering bio-psycho-social assessment and attempting hypothesis based interventions they have sought to bring about behavioural and psychological change to such an extent that clients can successfully move to less restrictive, well supported community based housing. Thus, the overall goal is short term admission for the purposes of assessment and rehabilitation, followed with community re-integration, and long term support.

At the Kemsley Unit at St. Andrews Hospital in Northampton England, a neurobehavioural rehabilitation unit was opened in 1979 for the rehabilitation of individuals who presented with severe behavioural problems following brain injury, and who had exhausted their local services. Using a behavioural approach within a clinical neuropsychological perspective staff at the Kemsley Unit have consistently been able to demonstrate impressive reductions in aggressive, disinhibited and
socially inappropriate behaviours and also in the production and strengthening of adaptive behaviours (Wood 1987; Wood 1984; Giles and Clark-Wilson 1988). It is worth stressing, as do these authors, that in the majority of cases gains were achieved with patients previously considered 'hopeless' cases. Evidence exists that the gains achieved within such a unit can be maintained long term (Burgess and Alderman 1990; Eames, Cotterill, Kneale, Storrar and Yeomans 1995), which adds further weight to evidence for the maintenance and generalisation of behavioural change following psychological interventions with the head injured (Eames and Wood 1985). Importantly, severely head injured individuals can also benefit from such an approach even several years after their initial injury (Burgess and Alderman 1990; Lloyd and Cuvo 1994).

Acceptance of the tender and preparations for opening the unit. The Lidcombe tender was accepted by the NSW Health Department and funds were released for structural changes to buildings, and for the recruitment of staff. I was seconded as Team Leader to the new Neurobehavioural Unit. A colleague with experience as a Residential Support Worker was appointed as Manager. Overall management was the responsibility of the Medical Director of the Lidcombe Hospital Brain injury Unit.

Staffing. I was given responsibility for the recruitment of all direct care staff to be appointed. It was necessary to employ sufficient numbers of staff to ensure a 2:1 ratio 24 hours per day. Advertising was conducted through the national press. It was explained that contracts would initially be short term, as it was expected the staffing ratio would drop as SA's behaviour improved. One difficulty that did emerge and that was not foreseen was insistence on the part of the Director of Nursing that staff be qualified nurses. I did not view this as essential because a) the skills required were not traditional nursing skills and most nurses would be unlikely to find the work rewarding and thus retention would be a problem, b) restricting the available workforce would make recruitment more difficult. Several meetings between myself, the Manager and the Head of Nursing over the following six months led to a
relaxation of this position, but only after it had become apparent following resignations that nursing staff did not adapt well to the new role. The difference in role functioning required by those working with persons with traumatic brain injury has recently been outlined by Jackson and Manchester (2001). The best retained staff typically came from backgrounds with social science degrees, and who were looking to further their experience before applying for clinical training in one of the allied health fields.

Morale. A core aspect of the unit, given the degree of threat and number of aversive behaviours exhibited each day, was maintaining staff motivation and professionalism. Initially, all staff received an intensive three day course in control and restraint procedures, and two days training in non-aversive behavioural management techniques. In addition, as Clinical Team Leader I was present on the unit for at least three hours every day Monday to Friday. No staff member was asked to carry out a procedure that both the Manager and I had not also carried out. The Manager was present on the unit Monday to Friday 9-5pm. Both myself and the Manager carried pagers and were on call 24 hours a day seven days per week. All staff met weekly on Wednesday afternoons, and treatment approaches were discussed and difficulties worked on collaboratively. Staff were also encouraged to reflect on their own affective reactions when working in the unit. The concepts of transference and countertransference in brain injury rehabilitation (Pepping 1993) formed an integral part of staff discourse within the unit.

Every three months staff were reviewed by the Unit Manager. The emphasis on reviews was always positive, with concrete examples of good working practice being provided. Staff morale amongst those who stayed longer than three months, (as all staff with a social science background did) was uniformly very high.

Family. The role and support of the family was viewed as crucial to the success of the rehabilitation effort. Prior to admission, at admission and regularly throughout SA's stay the Clinical Psychologist and Specialist Physician met with the family to
review progress, and discuss future treatment options. Throughout his time on the unit the family were supportive of all treatment approaches, and considered themselves involved in the assessment and treatment process.

Environmental structure. In the proposal it was made clear that the environment that SA would be admitted to would be crucial to improving his behaviour. Examples from the clinical and social psychology literature demonstrating the importance of environment on behaviour were used to support the need for an independent living space that resembled a regular home as closely as possible. The unit was not to be a locked environment, with the exception of the staff office. Mirrors were placed strategically to ensure that there were no blind spots within the building. The unit had a kitchen one bedroom, a living room, a day room, and a bathroom and toilet, a therapy room, and the staff office. Within the grounds of Lidcombe a cottage previously used as a staff residence was acquired to house the new unit.

Participant

Following his motor vehicle accident SA sustained multiple physical injuries including multiple fractures, internal abdominal injuries, and a severe brain injury with a bilateral frontal subdural haematoma. On admission to hospital his Glasgow Coma Score was 3. A cerebral CT showed a left frontal subdural contusion and compression of the left lateral ventricle. He made a good physical recovery. The exact duration of his PTA is not known. He was discharged from intensive care 2 weeks post injury, and admitted to a brain injury rehabilitation unit in Sydney 7 weeks post injury where he presented with extreme behavioural difficulties. On formal assessment over a year later he exhibited over 300 aggressive incidents in a 4 week period, with the duration of incidents lasting from a few seconds to fifteen minutes. These were major explosive outbursts defined by very loud shouting/swearing with concurrent protracted physical and verbal threats, property
destruction, and physical violence when staff were not able to elude him.

ASSESSMENT

Behavioural. After a review of the relevant literature on behavioural observations and recording I agreed with the Manager of the Unit that we would require continuous monitoring with a measure that was quick to use and reliable. Formal recording of aggression was therefore made continuously using the Overt Aggression Scale (Yudoksy, Silver and Jackson 1986) (see Appendix A). This is a scale that has been adapted specifically for the measurement of aggression in individuals who have suffered traumatic brain injury and has proven reliability and validity (Alderman, Knight, and Morgan 1997). Staff were instructed that if SA became threatening they were to remove themselves to the office as quickly as possible for their own safety. Typically SA would pursue them there and would be physically and verbally aggressive, screaming threats and punching and kicking the office door. Because over 95% of aggressive incidents in the first month culminated with aggression at the office door, this behaviour was chosen as the major indicator of aggressive behaviour.

In the first two weeks all incidents of aggression were also recorded on functional analysis. This type of assessment, derived from clinical psychology research approaches behaviours as serving a purpose (Sturmey 1996). By analysing the antecedents and consequences of behaviour (both immediate and more distant) hypotheses may be generated regarding the reinforcement contingencies that are maintaining behaviour.

Medical
Medication on admission is presented below

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
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<tr>
<td>Clonazapam</td>
<td>2mg</td>
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<tr>
<td>Chlorpromazine</td>
<td>150mg</td>
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<td>Chlorpromazine</td>
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<td>Inderal</td>
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Cognitive. On admission to the Neuro Behavioural Rehabilitation Unit SA was oriented to time and place, knew that he had been in a car accident and correctly stated this as the reason for his hospitalisation. Because of his level of agitation and aggression on admission, formal neuropsychological assessment was not possible. Memory could not be meaningfully tested. His immediate recall of three items (coin, shoe, orange) was "...orange, apple, ... apple now!". When the items were re-presented in an attempt to get him to repeat them correctly his response remained the same. He was dysarthric and this made for difficulties in understanding him, further potentiating his aggression. He presented with considerable expressive and receptive (motor and sensory) language problems, and displayed word finding difficulties and pronounced perseveration and echolalia. Most verbal utterances were demands (often shouted) and usually included abuse.

General intellectual assessment was only possible 5 months after admission to the NBRU. On the Wechsler Adult Intelligence Scale-Revised he demonstrated a global decline in intellectual functioning (premorbid estimate was Average Intelligence) covering reasoning, problem solving, abstract thinking and judgement abilities. His Verbal IQ was 62, his Performance IQ 65 and his Full Scale IQ was 62 (1st percentile). His language and concentration difficulties precluded formal memory assessment.

Both in testing and more generally within the unit, he consistently failed to demonstrate any insight into his behavioural or cognitive deficits. When confronted
with aspects of his behaviour he would deny any change. Previously described by family as a sociable, strong willed and responsible young man, he was now agitated most of the time, socially withdrawn, easily distracted and largely unable to communicate without screaming abusive threats and engaging in aggressive behaviour. He did not appear to be depressed but did become visibly anxious when there were changes in his environment, or when he was in a situation where he did not appear to have absolute control. There was no evidence of psychotic symptoms.

He presented with several difficult to manage behaviours whilst on the unit including, frequent, prolonged physical and verbal aggression typified by shouting/screaming, punching, kicking, slapping, head butting, spitting, verbal threats and abuse. He also displayed frequent impulsivity, disinhibition, loss of temper, non-compliance, social withdrawal, amotivation, sleep disturbance and incontinence of faeces. He spent most of his waking time watching television and smoking. He required help with all aspects of self care. He was usually able to complete simple tasks with prompting.

**Hypotheses**

**Aggression.** In discussion with the team and after reviewing functional analyses for the first three weeks, reviewing previous hospital reports and interviews with the family it was hypothesised that there were multiple factors contributing to SA's aggression. Firstly, aggression appeared to have strong negatively and positively reinforcing properties. By exhibiting aggression SA was able to terminate situations and interactions he was not comfortable with, such as requests that he bathe, or help cook. Aggression also appeared to be effective in ensuring people gave him what he wanted, and did so quickly, eg cigarettes, cups of tea.Whilst the organic damage and resultant impulsivity, disinhibition, easy confusion and poor insight could be viewed as original causes of aggression it appeared that aggression had
been consistently strengthened and maintained by powerful reinforcing properties within his environment. It was further hypothesised that language was no longer a viable means of communication for him. His dysarthria meant that he was usually misunderstood, and was often asked to repeat what he was saying. Thus aggression had become an adaptive means of communication that was regularly reinforced whilst the more acceptable alternative of verbal language was no longer effective.

It was further hypothesised that language and attention were adversely affected by the large amounts of medication that he had been given over the last year.

In addition to this, because of his aggression it was hypothesised that staff in SA's previous placements would have been reluctant to approach him, unless absolutely necessary. Thus he was only usually approached when it was necessary to restrain him because of altercations with other patients or to ensure compliance with medical interventions. Because of this it was hypothesised that staff had taken on aversive properties and were now primarily associated with physical restraint and the enforcement of institutional rules. Thus they were in the unfortunate position of being sufficient stimuli to elicit aggression simply by being staff!

INTERVENTION

Intervention for aggression

Extinction: Removing positive reinforcement of aggression. Because most of SA's aggression was related to being given a cigarette, after the third week these were now scheduled on an hourly basis during the day. Visual prompts were provided around the cottage to remind him when his next cigarette was due. Staff were instructed to respond to demands for cigarettes by directing SA's attention to the clock, asking him what time it was, explaining when the next cigarette was due
and asking him how long he would be expected to wait. If SA began to exhibit verbal/physical aggression staff were to leave him immediately and to go to the office.

A major issue relating to the use of extinction is the behavioural deterioration (extinction burst) that is noted immediately after the introduction of this procedure. Because I have experience in the use of this technique I was able to introduce it on this occasion after having satisfied myself that a) any exacerbation in behaviour would be manageable, b) staff understood that targeted behaviour would be likely to worsen initially. If staff working with a client use extinction it is of paramount importance that the exacerbation in behaviour does not lead to reinforcement at a higher level (Kazdin 1994). When this occurs, behavioural disorders are effectively shaped by staff reinforcing (i.e. strengthening) inappropriate behaviour at ever increasing levels of severity.

Removing negative reinforcement of aggression. A proportion of SA's aggression was generated by requests that he bathe. Initially he was physically escorted to the bathroom where he would then bathe himself. However after an initial assessment period it became clear that this was extremely stressful for SA. Thus it was decided that staff would ask him only once if he was going to bathe, and if he said no they would not pursue the matter. Similarly staff were instructed not to repeatedly ask him to do anything he had clearly expressed a desire not to do. Staff were to respect his wishes and to explain that they were doing so as a result of his having told them clearly he did not want to do something.

Differential Reinforcement of Other Behaviour. It was decided that SA would be able to earn tokens for small periods of time he went without exhibiting aggression. These tokens could be exchanged for goods that he had previously shown he liked (extra cigarettes, cans of coke, crisps). Thus every half an hour during the day that SA did not exhibit aggression, he was given a token by a staff member. The staff member would explain clearly what the token was for and would praise SA for
remaining calm during that time, and for any appropriate behaviour he had exhibited. On occasion staff were also asked to get SA to explain what the tokens were being given for.

Because the most pleasurable moments of SA’s day were when he was having a cigarette, staff ensured that they spent time with him whenever he smoked. During these periods staff deliberately avoided making any demands of SA, and talked entirely about those subjects he had a particular interest in, especially football. In this way it was hoped he would begin to associate staff with pleasant occasions, and also to appreciate that staff attention was not contingent upon aggression.

**Decreasing medication.** It was hypothesised that SA’s high levels of behavioural medication were contributing to his dysarthria. Because of this and also because of the known negative effects of such medication on attention, concentration and speed of information processing, behavioural medication was gradually decreased. Neuroleptic medication was totally withdrawn ten months post admission.

**Intervention for shouting/language**

Another major factor affecting SA’s rehabilitation was his tendency to shout/scream at people during most interactions. In order to address this problem, staff were instructed 5 months post admission to leave SA alone for 3 minutes every time he shouted at them (Time Out On The Spot). Staff explained what they were doing and why, and at the end of the 3 minutes re-engaged with him. Four times each shift staff also engaged SA in conversation for 4 minutes. At the end of each minute if he had not shouted staff praised him for this and provided him with a token which he could later exchange for a desired item (Cognitive Overlearning and Differential Reinforcement of Incompatible Behaviour). Also, from 7.00am in the morning until 11.00pm at night every half an hour SA went without shouting he was again given a token and told that this was for going half an hour without shouting or screaming (Differential Reinforcement of Other Behaviour).
Intervention for bathing

SA was very poorly motivated to maintain a reasonable standard of cleanliness. He would invariably refuse to bath when asked by staff and would instead insist that he had already had between one and four baths that day. He would become highly agitated at the very mention of bathing. When first admitted, if SA had not bathed by a certain time he was escorted to the bathroom by staff. However it soon became clear that he found this very stressful and would endure the entire procedure whilst screaming abuse and crying. It was therefore hypothesised that bathing had become an aversive event for SA as he had typically needed to be coerced into bathing in previous placements. Thus as mentioned earlier, to begin with staff were instructed not to pressure SA to have a bath. Instead his brother was recruited to help him bathe, as he was more comfortable with this. Over the next few weeks his brother bathed him between once and twice a week. Gradually as his aversion to bathing appeared to decrease a male member of staff began to help his brother bath SA. After a while his brother’s participation was faded out. Unfortunately SA still persisted in refusing to bath. Finally after trying less (response cost) restrictive procedures it was explained to SA that if he did not bath in the morning the television would be turned off for 5 minutes at 10.00am, 10 mins at 1.00am, 15 mins at 12.00noon and 20 mins at 1.00pm. This consequence was chosen because it was apparent it would act as a punishment in behavioural terms.

RESULTS

Aggression. With the introduction of extinction SA’s aggression escalated considerably as can be seen in Figure 1 below. Behavioural bursts such as this are common occurrences following the use of extinction. However it is notable that in SA’s case this extinction burst lasted several weeks, which demonstrates effectively the much longer periods of time required for learning consolidation in the severely head injured. After 32 weeks his aggression was reduced to zero and this was maintained after 4 weeks.
Language. SA responded extremely well to this approach. Within a month, the incidence of shouting had decreased markedly. There was also a concomitant increase in his adaptive language. Gradually it was possible to extend the period of time he had to go during the day in order to earn tokens for not shouting. It would appear that with the improvements in his articulation due to his decreased medication, and the regular reinforcing of appropriate language use by staff, language had again become an adaptive way for SA to communicate.
**Bathing.** For 5 weeks after the introduction of the response cost programme SA continued to refuse to bath although he clearly disliked the television being turned off. The significantly increased aggression during this period is reflected in Figure 1 between weeks 18 and 21. After 5 weeks he began to bath regularly. He stopped only twice afterwards, and quickly resumed bathing with the re-introduction of the programme.

![Graph of Frequency of Baths Per Week](image)

**Community participation.** As SA's aggression and shouting decreased it became possible to take him on escorted trips (using private vehicles and public transport) into the community. These included trips to parks and the beach, a bowling alley, home visits, and dinner in a local family restaurant.

Overall, SA improved considerably in the ten months following admission. His language improved greatly and he tended to use this to communicate instead of aggression. Aggression decreased markedly as did shouting/screaming. He is now a sociable young man who seeks out others for conversation and company. Self care skills have improved with him participating fully in meal preparation, dressing and washing himself. However, insight into both his cognitive and behavioural...
changes remains relatively unchanged.

Follow-up. Thirteen months post admission SA was discharged to his own house near the family home. He adapted well to this new environment and is still living there 4 years post discharge. He requires 60 hours per week attendant care from community support workers (Gurka 2002, personal communication). He continues to function well within a clear behavioural structure. Prosocial behaviours and activities of daily living are now rewarded with money. It is this money that pays the rent and the bills.

DISCUSSION

Clinical psychology principles clearly contributed to the development of the service proposal, and also to its successful implementation and outcomes. It is probable that the two factors which contributed most to SA's improvement were the withdrawal of medication and the prolonged consistent implementation of the neurobehavioural approaches already described. It is unlikely that either of these interventions could have been conducted successfully in his previous placements. As previously mentioned in order to decrease behavioural medication and to utilise extinction one must be confident of being able to manage the initial exacerbation of aggression which is likely to follow. Neither the psychiatric ward nor the brain injury ward were equipped to this safely. In addition, psychological approaches with a large behavioural component usually require a long period of time to achieve durable changes, and this is especially so in the case of head injuries. The disruption to operant learning caused by closed brain injury is being increasingly recognised (Jackson and Bentall 1991; Rolls 2000)

In neurobehavioural units the opportunity arises for interventions to be conducted over lengthy periods of time and with greater consistency than might otherwise be the case. The detrimental effect of inconsistent management cannot be overstated.
Others have emphasised that inconsistent management of aggression almost inevitably results in intermittent reinforcement of violent behaviour. Not only is intermittent reinforcement a powerful type of reinforcement, it makes violent behaviour very difficult to extinguish (Drinkwater and Gudjohnssen 1989).

Of equal importance is the opportunity that neurobehavioural rehabilitation units have to focus on the consistent reinforcing and strengthening of adaptive behaviours. Regularly reinforcing periods of time that a person goes without exhibiting undesirable behaviour or reinforcing behaviour that is incompatible with aggression can have profound effects on the severely head injured patient who is violent (Manchester, Hodgkinson, Pfaff and Nguyen 1997). Units such as this one allow for the use of non-aversive procedures such as extinction and differential reinforcement in place of the frequently used alternatives of punishment, physical restraint and seclusion.

Within the developmental disability arena outreach models are often considered a strong alternative to specialised units for the management of difficult behaviour (Martin 1991; Minnen van, Hoogduin, and Peeters 1993), and empirical evidence has emerged for the efficacy of both approaches (Colond and Wiersler 1995; Gaskell, Dockrell, and Rehman 1995). Proponents of the outreach model contend that community services ought to be extended to ensure that the needs of all those living in the community are properly met, including the needs of those who present with difficult to manage behaviour. By doing this, inappropriate hospitalisation can be avoided. In support of this model is the contention that training in the target environment is more likely to be maintained in the long run if it is carried out in the setting that the skills are designed for. Other arguments revolve around the ethics of moving someone from their home because of inappropriate behaviour and the possibility that specialised units will encourage local services to use them as a 'dumping ground' instead of expanding their own services. It has also been noted that institutions provide little social contact between staff and clients and few opportunities for community participation (Wood 1989).
In the case of the severely head injured person who exhibits severe prolonged aggression both specialised units and intensive community support services are necessary. Clearly patients like SA will continue to require intensive support when re-entering the community, but without specialised units to care for them to begin with, community re-integration (supported or otherwise) is unlikely to become a realistic option. An outreach model by itself would not be appropriate for people with a brain injury who are being cared for already in an inappropriate environment (eg a locked psychiatric ward). Most people who suffer a traumatic brain injury are living with family members at the time of the accident. An outreach model alone, pre-supposes that family members will be able and willing to try to care for a severely disturbed individual at a time when they are already having to come to terms with significant psychosocial stressors of their own as a result of the individual's injury. Similarly, an acute rehabilitation ward is a far from ideal environment to adopt neurobehavioural approaches for extremely disturbed individuals given the problems of other patients, frequent visitors and the considerably lengthier periods of time required to see behavioural change when adopting non-aversive approaches.

Pointing to the problem behaviours served by an outreach team in other clinical groups and equating these with brain injury ignores the widely differing aetiologies of the two groups, the different rates of recovery, the different staff skills required for care and support, and the often different psychosocial backgrounds between groups. Rehabilitation in brain injury is not purely about changing a noxious environment. Rather it involves an interdisciplinary, labour intensive approach to both behavioural/cognitive remediation and physical recovery, that can stretch over months and in some cases years.

Specialised units decrease the likelihood that patients will be inappropriately placed in psychiatric settings thereby harming not only their own recovery but also impacting negatively upon the recovery of other more appropriately placed patients. They also allow for the thorough and ongoing assessment of the individual's
behaviour, personality and social needs. In addition to this they provide adequate staff/patient ratios thereby decreasing staff stress and burnout and allow easy access to specialist medical and psychological support. Within such a setting the opportunity for hypothesis based, least restrictive management approaches becomes a reality rather than an idyll. With a philosophy that underlines the rights of the individual and that has successful reintegration into community living as an end goal they present a viable option for the rehabilitation of patients who might otherwise be alienated from any rehabilitation at all.

Specialised units also have the advantage of attracting specialists in clinical psychology principles. Behaviour therapy of the type required in neurorehabilitation is sophisticated. Those applying these principles require a thorough knowledge of the principles of learning theory and how they apply both to proximal and distal factors that may be maintaining problem behaviours (Hayes, 1997; Ducharme 2000). Whilst neurobehavioural theory clearly applied to much of the service provision provided here, more recent advances in clinical psychology ought to widen the scope for psychological interventions provided for this client group in the future. In particular, cognitive-behavioural conceptualisations of anger and aggression have increased our understanding of these dual processes considerably (Novaco and Welsh 1989). Much greater emphasis has been placed recently on the individual and psychological processes related to self monitoring and self control in aggression and anger across various populations including psychiatry, learning disabilities, and brain injury (Frey and Weller 2000; Whitaker 2001; Demark and Gemeinhardt 2002). Although SA may well have been too impaired to benefit from a more cognitively oriented approach, other clients may gain from adapted cognitive therapy following a successful response to neurobehavioural rehabilitation (Manchester and Wood 2001).
SUMMARY

The primary aim of clinical psychology practice in neurobehavioural rehabilitation is to understand the multi-component causes of aggression and the other behaviours which inhibit rehabilitation. Following thorough assessment, hypothesis based interventions can be conducted that aim at decreasing maladaptive behaviours and strengthening adaptive ones, thereby increasing the likelihood of successful community reintegration. In addition an understanding of the importance of staff training, staff support and staff attributions is also crucial to the success of such units, as in essence staff feedback is the treatment.

Evidence from clinical psychology research suggests that the severely head injured with significant behavioural problems can be helped with such an approach, even several years post injury and that these gains can be maintained and can generalise. Not only does this significantly improve the potential for improved quality of life for patients, it also increases the likelihood of greater independence in the future, thus easing the financial pressure on local health and community services. Furthermore, it has the potential to reduce considerably the sometimes overwhelming emotional burden borne by families.
REFERENCES


Gurka, J. (2002) Clinical Director, Westmead Hospital Brain Injury Rehabilitation Unit, NSW. Personal communication.

Hayes, S. C. (1997). Technology, theory, and the alleviation of human suffering. We still have such a long way to go. Behavior Therapy, 28, 517-525.


Mental Handicap Research, 4, 44-66.


### OVERT AGGRESSION SCALE (OAS)

**Stuart Yudofsky, M.D., Jonathan Silver, M.D., Wynn Jackson, M.D., and Jean Endicott, Ph.D.**

**IDENTIFYING DATA**

<table>
<thead>
<tr>
<th>Name of Patient</th>
<th>Name of Rater,</th>
</tr>
</thead>
</table>

Sex of Patient: 1 Male 2 Female

Date / / (mo/day/yr)

Shift: 1 Night 2 Day 3 Evening

☐ No aggressive incident(s) (verbal or physical) against self, others, or objects during the shift. (check here)

**AGGRESSIVE BEHAVIOR**

*(Check all that apply)*

#### PHYSICAL AGGRESSION

- Makes loud noises, shouts angrily
- Yells mild personal insults, e.g., "You're stupid!"
- Curses viciously, uses foul language in anger, makes threats to others or self
- M. makes clear threats of violence toward others or self (I'm going to kill you.) or requests to help to control self
- Makes threatening gesture, swings, slams, pushes, pulls hair without injury to them
- Attacks others causing mild–moderate physical injury (bruises, sprain, welts)
- Attacks others causing severe physical injury (broken bone, deep lacerations, internal injury)

#### VERBAL AGGRESSION

- Makes loud noises, shouts angrily
- Yells mild personal insults, e.g., "You're stupid!"
- Curses viciously, uses foul language in anger, makes threats to others or self
- M. makes clear threats of violence toward others or self (I'm going to kill you.) or requests to help to control self
- Makes threatening gesture, swings, slams, pushes, pulls hair without injury to them
- Attacks others causing mild–moderate physical injury (bruises, sprain, welts)
- Attacks others causing severe physical injury (broken bone, deep lacerations, internal injury)

**PHYSICAL AGGRESSION AGAINST OBJECTS**

- Slams door, smashes clothing, makes a mess
- Throws objects down, kicks furniture without breaking it, mark the wall
- Breaks objects, smashes windows
- Sets fires, throws objects dangerously

**PHYSICAL AGGRESSION AGAINST OTHER PEOPLE**

- Makes threatening gesture, swings, slams, pushes, pulls hair without injury to them
- Attacks others causing mild–moderate physical injury (bruises, sprain, welts)
- Attacks others causing severe physical injury (broken bone, deep lacerations, internal injury)

Time incident began: _ : _ AM/PM

Duration of incident: _ : _ (hours/minutes)

**INTERVENTION** *(check all that apply)*

- None
- Immediate medication given by mouth
- Immediate medication given by injection
- Use of restraints
- Injury requires immediate medical treatment for patient
- Injury requires immediate treatment for other person

**COMMENTS**

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**Figure 10-1.** The Overt Aggression Scale.

Curriculum Vitae
Qualifications

1987 B.Sc(Hons), I.I. Psychology, Plymouth Polytechnic.
1991 M.A. in Clinical Psychology, University of Sydney
1991 Chartered Clinical Psychologist
1997 Associate Fellow of the British Psychological Society
2001 Practitioner Full Member of the BPS Division of Neuropsychology

Employment

May 1998 - Consultant Neuropsychologist at the Transitional Rehabilitation Unit, Haydock Lane, St Helens. Provide clinical leadership within a 19 bed neurobehavioural rehabilitation unit, with a national referral base.

April 1997 - Locum Clinical Psychologist, South Eastern Sydney Area Health Service, Community Mental Health Team.

Nov 1988 - Clinical Neuropsychologist, Neurosciences Hope Hospital, Salford NHS Trust.

Nov’ 1997 - Clinical Neuropsychologist, Neurosciences Hope Hospital, Salford

Oct’ 1997 - Clinical Team Leader, The Neurobehavioural Unit, Lidcombe Hospital, Sydney, Australia.

Feb 1996 - Locum Clinical Psychologist in Acute Psychiatry, Stockport Health Authority.

Sept 1996 - Clinical Team Leader, The Neurobehavioural Unit, Lidcombe Hospital, Sydney, Australia.

May 1994 - Clinical Team Leader, The Neurobehavioural Unit, Lidcombe Hospital, Sydney, Australia.
June 1993 - Locum Neuropsychologist, York District Health Authority.

Nov 1993

June 1993

Jan 1991 - Clinical Psychologist, Learning Disability Service, Canberra Government Services, ACT.

Conferences

March 2002 Two day conference on impaired awareness in neuropsychology and psychiatry; its assessment and treatment. Liverpool Hospital, New South Wales. Lectured on assessment and cognitive therapy.

Nov 2001 Two day conference. British Society for Rehabilitation Medicine Autumn Scientific Meeting in Association with the Royal College of Paediatrics and Child Health. Lectured on adolescent behavioural rehabilitation.


May 2001 Four day conference. 4th World Congress on Brain Injury, Turin, Italy. Lectured on cognitive therapy.


Oct 1998 Two day conference on social handicap and rehabilitation in brain injury. Westmead Hospital, New South Wales. Presented paper on cognitive and behavioural approaches to remediating social handicap.


Invited Lecturer

1994 Australian National University. Lectured on MA in clinical psychology course on the management of challenging behaviour in institutional settings.

1993 Leeds University, Postgraduate School of Psychiatry. Paper on the use of behavioural pharmacology in learning disabilities.

Publications


In the name of the Senate and by authority of the same be it known that

David Thomas Manchester

having fulfilled all the requirements and having passed all the examinations prescribed by the By-laws has been this day admitted to the degree of

Master of Psychology

and to all the privileges attached to the same by Royal Charter in token whereof the Senate has authorised the Corporate Seal of The University to be hereunto affixed

D. Mc Nicol
Vice-Chancellor and Principal

Dean of the Faculty of Arts

Dated this Fifth day of August
One thousand nine hundred and ninety-one

Keith Jennings
Registrar
The Validity of the Family Assessment Questionnaire

This research investigated the validity of the FAQ to identify families of individuals with schizophrenia who were high in expressed emotion. It involved administering the questionnaire to first degree relatives of individuals with schizophrenia in the community in Sydney, and analysing and interpreting all data.

Dr David Kavanagh,
Psychology Department,
University of Sydney.

This transcript was lost in transit from Australia to the United Kingdom. Unfortunately a copy is not available from the University of Sydney. Every effort was made to locate a copy, including my visiting the university in March of this year, and looking through the archives in the department.

David Manchester,
2002.
Academic Dossier
NEUROLEPTICS, LEARNING DISABILITY, 
AND THE COMMUNITY: 
SOME HISTORY AND MYSTERY.

David Manchester 
2002
Introduction

Recent papers have again highlighted the consistently high use of neuroleptic agents among people with a learning disability, despite the lack of good evidence to support their role in this population for behaviour management and despite the risks of such medication. Evidence suggests however, that prescribing habits have remained relatively unchanged; the reasons for this are poorly understood. Given the lack of understanding about the factors contributing to such drug use, and the possibility that use of neuroleptics will increase as people with learning disabilities move into the community, there seems a clear need for clinical guidelines to cover the prescribing and monitoring of neuroleptics within this group. Such guidelines should also ensure that reviews using reliable measures of treatment efficacy, are carried out regularly.

For the sake of clarity the term learning disability is used throughout this paper and replaces the various other terms (for example, mental handicap, mental retardation, and development disability) used to describe the same client population in some of the papers mentioned. Learning disability is characterised by an IQ of less than 70. The prevalence of learning disability is between 1.5% and 2% of the population (Bregman and Harris 1995).

Behavioural Medication and Learning Disability

Several studies in Britain and abroad have again attested to the widespread use of psychotropic medication in people with learning disabilities, with neuroleptics being by far the most common drug of this type to be used (Sachdev 1991; Linaker 1990; Ballinger, Ballinger, Reid and McQueen 1991; Ryan 1991; Obaydi, Eva, and Puri 1995; Brylewski and Duggan 1999, Tyrer and Hill 2000). It is estimated that most people with a learning disability receive one or more drugs to control behaviour, including stimulants, anticonvulsants, antidepressants, major
tranquillisers and anxiolytics. Overall those most commonly used in managing
behaviour are neuroleptics (Whitman, Donald, Spence, and Spence 1990). In his
review of 168 people with learning disabilities living in hospital, Linaker (1990)
noted that 49% of residents were receiving neuroleptic medication.

Standard psychopharmacology textbooks assert that the clearest indication for the
use of neuroleptic medication is to treat psychiatric disorders, where the symptoms
they aim at decreasing are causing suffering and disability for the client (Harrison-
Reid 1984). Estimates for serious psychiatric disorders in people with learning
disabilities range from 8% to 15% (Debs and Hunter 1991). One recent American
survey of over 40,000 people with learning disabilities living in hospital or in the
community noted a prevalence for psychoses of 6.68% in people under 22 years
of age, and of 5.69% in people in people aged 22 and over (Jacobson 1990). The
incidence of schizophrenia alone has been estimated as 3.45 among hospital
residents (Heaton-Ward 1977).

Although there is a consensus that the prevalence of psychiatric illness in people
with learning disabilities is greater than that in the general population, the true rate
is notoriously difficult to verify. This is partly because people with severe to
profound disability are unlikely to be able to give adequate or reliable self report,
and partly because most studies have concentrated on hospital populations, which
are by definition unrepresentative of the client group as a whole. Studies on this
topic have also been criticised for using vague diagnostic criteria and for the
relaxed interpretation of diagnostic guidelines (Meadows, Turner, Campbell,

The use of neuroleptic medication for the treatment of psychoses in learning
disability is considered appropriate given its efficacy in the non-learning disabled
population. Current evidence suggests that individuals with dual diagnosis do
benefit from antipsychotic medication. Pary (1995) reviewed the charts of
individuals whose neuroleptic medication regimen was discontinued. At twelve
months follow up it was noted that those persons with a psychotic illness were
significantly more likely to have been restarted on neuroleptics at 3 months and 12 months.

Even though mental illness is thought to be more prevalent in people with learning disabilities, psychotropic drug use in this group exceeds even the most generous estimates of mental illness warranting such medication. Although there is little doubt that neuroleptics offer considerable relief to those suffering from a psychotic illness (Tyrer and Hill 2000), prescribing in people with learning disabilities often continues in the absence of any psychiatric diagnosis (Fan 1991). A study of a hospital in Hong Kong for people with moderate and severe learning disabilities found that only one of 69 subjects receiving an antipsychotic drug had a formal psychiatric diagnosis (Fan 1991). Similarly, in England of 505 hospital residents studied and for whom a psychiatric diagnosis could be ruled out, 183 (36%) were found to be receiving psychotropic medication, predominantly neuroleptics (Clarke, Kelly, Thinn and Corbett 1990). Neuroleptic medication may be the treatment of choice for aggression in learning disability. The relatively low number of those with challenging behaviour who receive behavioural treatment has been noted (Oliver, Murphy and Corbett 1987).

The main reason for giving neuroleptics to people with learning disabilities is not effective management of psychoses but rather the control of disruptive behaviour such as aggression, self injury, and destruction of property (Chadsey-Rusch and Sprague 1989). Despite the prevalence of medication usage in this area there is a conspicuous lack of good evidence supporting the role of neuroleptics for the control of maladaptive behaviours with this client group. Studies purporting to show their efficacy have been criticised for poor methodology, including lack of controls, the use of clinical impression rather than the reliable measurement of behaviour to assess outcome, and a failure to measure the effects of medication on other behaviours in order to facilitate a reasonable risk-benefit analysis (Aman 1983). Aman (1989), writing as part of the American Psychiatric Association’s task force on treatments of psychiatric disorders, stated that it was still not clear whether the neuroleptics have specific effect on certain maladaptive behaviours, or whether the
clinical changes that occur are simply part of a more general sedative action. One Australian psychiatrist has noted that the common prescription of neuroleptic medication for those with learning disabilities seems to be based more on custom than on empirical study (Parker 1991). In some cases these drugs may worsen already inappropriate behaviours (Burgio, Page, and Capriotti 1985).

Most recently, as part of the Cochrane Database Systematic Review Brylewski and Duggan (1999) reviewed over 500 papers concerned with the effectiveness of antipsychotic medication in reducing challenging behaviour in the area of learning disability. The aim of the study was to review the evidence from randomised controlled trials. For the purposes of their review the diagnosis of challenging behaviour implied that a formal psychiatric disorder such as schizophrenia or affective disorder had been excluded. Of the studies reviewed only three were considered acceptable randomised controlled trials. Of these three studies none demonstrated treatment efficacy. The authors concluded that there is no trial-based evidence of the effectiveness or ineffectiveness of antipsychotic medication for adults with learning disability and challenging behaviour. Despite this they note that "...very many adults with (learning disability) and challenging behaviour who have no discernible mental illness are treated with these powerful drugs." p369.

Drug therapies can also allow for the problem to be seen as primarily the individuals, rather than viewing it within a wider environmental and social context. For example, those factors that make the problem more likely to occur could be examined with a view to ameliorating these instead or as well (Duker, van Druenen, Karel, and Han 1986). This view can also mean that proven behavioural interventions (Gardner and Cole 1989) go untried and opportunities to help the person learn more adaptive alternative behaviours such as functional communication (Bird, Dores, Moniz, and Robinson 1989), social skills (Matson and Stevens 1978), and relaxation training (Harvey 1979) are missed. One recent study noted that reducing neuroleptic medication was associated with significantly higher engagement in activity. These researchers suggest that increased engagement
following drug reduction is consistent with reduced sedative effects and increased
coordination and general well being (Ahmed, Fraser, Kerr, Kiernan, Emerson, and
Robertson 2000).

The long term use of neuroleptics exposes the client not only to an increased risk of
acquiring the potentially irreversible condition of tardive dyskinesia, but also to
the potentially fatal neuroleptic malignant syndrome. Tardive dyskinesia is the most
common long term side effect of neuroleptic drug use and involves the
development of involuntary muscle movements. It can lead to permanent
disfigurement and is often mistaken as being due to the learning disability. It is
estimated that 30–45% of those taking antipsychotic drugs on a prolonged basis
will develop tardive dyskinesia (Kalachnik, Harder, Kidd Nielsen, Errickson,
Doebber and Sprague 1984). In addition concern has been raised as to the
possibility of persons with learning disability being at increased risk for developing
movement disorders by virtue of their concurrent underlying neurological damage
(Sachdev 1992; Gingell and Nadarajah 1994). One Australian study of 53 patients
with a learning disability found that 34% of those clients who had been exposed to
neuroleptics had symptoms that suggested tardive dyskinesia, and 30% had a mild
tremor. Also, the 60% of subjects who were being maintained on neuroleptics
drugs at the time of study had been receiving them for a mean of 14 years
(Sachdev 1991).

Recently the issue of neuroleptic drug use and side effects has started to come
before the courts, with large awards being made in America to people treated with
neuroleptics who have gone on to develop tardive dyskinesia (Shriqui, Bradwejn
and Jones 1990). According to one reviewer, the 20 to 25 law suits involving rights
related to medication have consistently re-affirmed the right of (learning disabled)
people to be free from unnecessary or excessive medication, and have stipulated
that medications are not to be used as punishment, or for staff convenience, or at
levels that interfere with habilitation programming (Intagliata and Rinck 1985).

Non-Medical factors associated with use of neuroleptics
In attempting to understand the continued high levels of use of neuroleptics found in learning disabled people, researchers have implicated various non-medical factors in their continued use. These include the type of environment the person lives in, poor staffing levels in residential accommodation, the lack of recreational opportunities, the availability of a physician, and the training level of caregivers (Sachdev 1991). Although these factors are intuitively appealing, the evidence supporting a role for any of them in prescribing patterns is conflicting. For example, many believe that more staff for each client group would lead to a reduction in the need for such drugs as staff have more time to interact with and train clients. It is hypothesised that this greater degree of interaction would result in a reduction in difficult behaviour. Yet one investigation into the determinants of maladaptive behaviours in institutionalised learning disabled people found that worsening the staff:client ratio by increasing the number of clients for each direct care staff member was associated with a decrease in maladaptive behaviour (Duker, van Druenen, Karel and Han (1986). Also solely increasing staffing levels does not seem to have the beneficial effects that might be expected. Increasing the number of staff working with a given client group has been found to have a marginal to non-existent effect on improvements in both staff performance and client behaviour (Felce, Repp, Thomas, Ager and Blunden 1991). Similarly, in a investigation examining the prescription pattern and usage of ‘as required (PRN)’ neuroleptics in the management of challenging behaviour in a hospital setting, a better staff:ratio did not bring about any reduction in the usage of PRN medication (Suresh 1998).

**Staff knowledge.** Perhaps one of the best ways to reach an understanding of psychotropic drug use in this area is to focus attention on those people who make the decision to use this medication. In the non learning disabled population this would typically mean speaking to the patient/consumer. However in learning disabilities this approach is more confusing. It is rare that clients/consumers will ever request medication for help in addressing their challenging behaviour, and instead tend to be passive recipients in the prescribing process, taking what they are proffered. Given the cognitive deficits that define their condition it is unlikely
that recipients could be considered to have capacity to consent to treatment. Instead one must look at two other groups of people, those who request the treatment, and those who prescribe it.

Singh, Epstein, Stout, Luebke, and Ellis (1994) surveyed 200 teachers of students with emotional and learning disabilities, and Singh, Ellis, Donatelli, Williams, Ricketts, Goza, Perlman, Everly, Best, and Singh (1996) investigated 377 professional staff including social workers and psychologists. The results from both studies indicated that respondents were poorly educated and ill informed with regards to medications and their effects. In addition respondents viewed behavioural interventions to be the best alternatives to medication, and reported that direct staff had little influence over treatment decisions. Professionals viewed aggression and self injurious behaviours as the behaviours most likely to lead to drug treatment.

In a later study Christian, Snycherski, Singh and Poling (1999) focussed entirely on the direct care staff themselves. These individuals are, as these authors point out, critically important to the well being of people with intellectual disability because of the large amount of time they spend with consumers, and the fact that they are often responsible for implementing and monitoring treatment, sometimes with minimal supervision. Also, and of equal importance is the observation that physicians may rely heavily on the reports of staff when making treatment decisions (Silka and Hauser 1997).

Most of the 334 respondents in the Christian et al study considered medication for behavioural purposes to be acceptable for individuals in life threatening situations, and also with those for whom all other treatment options had been tried (83.5% and 79.9% respectively). Aggression and self injurious behaviours were the two challenging behaviours felt most likely to lead to pharmacological interventions. Interestingly, more than 50% of respondents were of the opinion that behavioural interventions should be attempted before drug therapy, and 42% to 71% advocated combined behaviour therapy and drug treatment for a range of behavioural difficulties and psychiatric disorders.
Direct care staff perceived themselves as having the least influence when it came to making decisions either to initiate or to discontinue drug therapy. Instead psychiatrists, physicians, and psychologists were considered to have most influence in this regard. Two thirds of respondents did not feel they had received adequate training in drug therapy and one third felt they had not received adequate training in behavioural techniques. Over 80% of the staff desired additional training in both areas.

Christian and colleagues, based on the findings presented above suggest that training direct care staff (as well as professional staff) in the psychopharmacology of developmental disabilities may contribute substantially to the optimal use of psychotropic medications. However, approaches that consist only of educating staff or even involving psychiatrists and physicians with a special interest in learning disabilities may be unlikely to effect major change in use of neuroleptics. Even when the number of doctors is increased and well intentioned prescribing philosophies intent on reducing use exist, there is not necessarily any decrease in prevalence of prescribing, although dosages levels may decrease (Linaker 1990, Wressel, Tyrer, and Berney 1990).

For example, in Linaker’s study 49% of 168 institutionalised learning disabled adults were found to be receiving neuroleptics. Yet during the previous five years it had been the policy of the medical administration at the institution to reduce or eliminate psychotropic drugs whenever possible. However an investigation at the same institution ten years earlier when the population was 50% higher showed exactly the same frequency (49%) of psychotropic drug use (Linaker 1990).

Similarly, in a British study nursing staff were aware of the importance of reviewing the use of psychotropic drugs, had an increased awareness of the potential risks associated with them, especially in patients with a learning disability, and had received training wherein they were encouraged to “eschew” such medication. Although a reduction in dosage was noted between the time of study and four years previously, 47 of the 243 patients (24%) found to be taking neuroleptic drugs had not been receiving these drugs four years before and had been started on
them during the interim. Of these 47 patients, 27 were diagnosed as having a behaviour disorder, which, as the authors point out, is not a category which automatically leads itself to the prescription of anti-psychotic medication (Wressel, Tyrer and Berney 1990).

Finally, it has also been suggested that prescribing factors in institutions may be influenced by other non-medical factors such as the availability of a physician or psychiatrist. Although in the Linaker study a high correlation between neuroleptic drug dosage and the availability of a physician may reflect physicians’ tendency to quickly administer drugs, Linaker (1990) cautions that the study design does not exclude the opposite conclusion, that the physicians of the institution are adequately distributed, according to need. He also points out that while the negative relation between level of activity and neuroleptic drug dosage noted in this study may suggest that increasing activities would result in lower dosages, it could also be explained by clients with less distributing behaviour being easier to activate and tending to receive less medication in any case.

**Neuroleptics and the community**

To date, most studies of neuroleptic drug use in learning disabilities have concentrated on prevalence within hospitals, given the large captive population and the ease of access for researchers. After deinstitutionalisation, however, the more pressing issue is the effect of community care on future neuroleptic use. Although type of residence (that is, environment) has been considered to influence prescribing patterns, the evidence for this view has been conflicting. Some researchers have found comparable levels of psychoactive drug use in community settings (Martin and Agran 1985) but others have found community use to be considerably less than hospital use (Intaglia, and Rinck 1985; Hill, Ballow, and Bruininks 1985; Zaharia and Struxness 1991). An early review of five community studies concluded that the use of psychotropic and anticonvulsant drugs in community settings was comparable to that in institutions (Agran and Martin 1985). However, one of these studies was only of children (Davis, Cullari and Breuning
1982) and another has since been discredited (Holden 1987).

Though research shows large differences in prevalence of prescribing between hospitals and the community, the effects of environment on prescribing practice remain equivocal, not least because those clients with fewest behavioural problems are usually living in the community anyway. Therefore less of a perceived need for psychotropic medication would be expected in community residences to begin with. Thus, a drug review after a big move into the community from hospital showing a large difference in prescribing rates between the two settings need not reflect any change in prescribing habits.

To illustrate this point, it is helpful to imagine a hospital with 100 clients, 60 of whom are receiving neuroleptic drugs. After two years of resettlement 50 of the most able clients are living the community; these include the 40 who were not taking neuroleptics and 10 who were. A survey of prevalence at this point would find that 100% of hospital residents were taking neuroleptics, compared to 20% of those in community, yet the true prescribing rate has remained unchanged. Interestingly, one group of British researchers who followed the community move of 81 people with a learning disability in the West Midlands found that of the 64 people for whom full information was obtained, 24 (37.5%) were receiving antipsychotic drugs two years before discharge, 25 (39%) at discharge, and 25 (39%) after living in the community for at least six months (Thinn, Clark and Corbett 1990). Similarly, Obaydi, Eva and Puri (1995) examined 34 people with a learning disability who moved from hospital into the community. No significant differences were found in the number of subjects receiving antipsychotic medication just prior to discharge and one year after discharge. Also Boucher, Morin and Dubois (1994) analysed retrospectively neuroleptic medication prescribed over a 12 year period in three groups of clients with a learning disability. Two moved to the community whilst a third group remained in hospital. These researchers found that deinstitutionalisation had no impact on the prescribing of neuroleptics. This finding would certainly suggest that neuroleptic drug use does not necessarily decrease solely because people no longer live in institutions.
Another possible explanation for high rates of neuroleptic use in the community is that neuroleptics in this population are given for reasons in addition to those usually used in hospitals, possibly because less maladaptive behaviours are considered more serious in the community. Thus, behaviours that may at one time have been tolerated as the norm or not seen as problematic in institutions become more conspicuous in community settings. One study found that use of major tranquilisers was significantly related to hyperactivity and withdrawal among community based residents and to violent or destructive behaviour, and level of clients' physical development among institution based residents (Intagliata and Rinck 1985). However the results of Obaydi and Puri (1995) which were mentioned previously, would tend to indicate that this is not the case.

**The General Practitioner's Increasing Role**

As more people with learning disabilities move into the community, more general practitioners are going to become involved in meeting their health needs, in keeping with the philosophy of community care. A major reason for consultants is likely to be the pharmacological management of maladaptive behaviours. General practitioners are unlikely to have specialised in either learning disability or behavioural pharmacology (Parker 1991). They are also less likely to be aware of alternative management approaches.

General practitioners may find some referrals to be financially motivated, as caregivers choose to attempt to control disruptive behaviour by the relatively inexpensive means of medication. Interventions that require staff training or the employment of behaviour analysts may be more costly. One commentator has asserted quite plausibly that the solutions which psychopharmacology offers have the potential for resolving fiscal dilemmas as well as for alleviating client centred problems (Mouchka 1985).

One argument that is occasionally used to justify giving neuroleptic medication for maladaptive behaviours is that these drugs bring the behaviour sufficiently under
control for other less restrictive and more positive procedures to be used. Indeed, using medication to create this “window of opportunity” for the introduction of behavioural methods may be the most constructive use of this medication in this area. However, it has been suggested that this very emphasis on medication can replace other more appropriate, but also more difficult management strategies (Sachdev 1991). Others have cautioned that short term benefits may become long term treatment in the absence of careful monitoring programmes (Gualtieri and Keppel 1985).

Use Of Guidelines

Regardless of just what factors are contributing to the high use of neuroleptics in people with learning disabilities, a consensus seems to be emerging on the need for clinical protocols to control for the prescribing, monitoring, and reviewing of behavioural drugs in learning disability. By 1993 researchers contended that these drugs ought to be given as part of an individualised habilitation plan and according to guidelines which monitored intended and unintended effects (Intagliata and Rinck 1985). Others suggested that the construction of a well conceived drug evaluation strategy would not only improve medical practice but also increase adaptive behaviours, increase the likelihood of successful community placement, and decrease the risk of serious side effects (Keppel and Gualtieri 1988). Similar sentiments were echoed elsewhere ((Parker 1991; Burgio, Page and Capriotti 1985; Rinck, Guidry and Calkins 1989).

The effectiveness of such guidelines in decreasing the use of pharmacological treatment in this population has already been shown (Hancock, Weber, Kaza and Her 1991; James 1983). Reductions gained after the introduction of approaches requiring systematic monitoring and evaluation have been maintained after eight years of follow up (Briggs 1989). In a recent study in the United Kingdom Ahmed, Fraser, Kerr, Kiernan, Emerson and Robertson (2000) conducted a randomised controlled trial to investigate factors influencing antipsychotic drug reduction prescribed for challenging behaviour in people with learning disabilities. Thirty six
participants randomly allocated to the experimental group underwent four, monthly 25% drug reduction stages. One third completed full withdrawal (33%), whilst one fifth (19%) achieved and maintained at least a 50% reduction in dosage. Similarly in a study of 23 adults with learning disability May, London, Zimmerman, Thompson, Mento, and Spreat (1995) successfully reduced chronic neuroleptic medication in 60% of participants. Of the 40% of participants who worsened most required ongoing psychoactive medication of another type. Only two participants were returned to neuroleptics.

Brylewski and Duggan (1999) recommend that incorporated within any guidelines is information for carers and the recipients of care regarding the paucity of evidence for the effectiveness of these treatments. In addition, these researchers contend that steps be taken to ensure that managers and policy makers insist on good research before implementing guidelines, and that clinicians ensure that target symptoms are identified, and reliably measured as a baseline before embarking on a therapeutic trial of antipsychotic medication. Regular reviews of efficacy and adverse effects should be instigated, and if no improvement is noted the antipsychotic should be withdrawn.

Conclusion

As increasing numbers of people with a learning disability move into the community, there is little to suggest that those already taking neuroleptics will stop, some evidence to suggest those not taking them may get them, and considerable evidence to suggest that most of those receiving this medication ought not to be doing so. Attempts to explain prescribing levels in terms of non-medical factors have been conflicting, and there is a poverty of good longitudinal research to explain many of the findings made to date.

Intuitively appealing interventions such as increased staffing levels, increased staff education, greater recreational activities, or better housing may not be the panaceas we might all like them to be. In addition, the possibility that the use of
neuroleptic drugs may become even more commonplace in the community because of the greater cost of alternative management strategies, the financial pressures on service providers, and the possible utilisation of neuroleptics for a wider range of behaviours continues to warrant cautious attention and future research.

In the absence of adequate knowledge about those variables controlling neuroleptics use, there seems a clear need for guidelines to ensure that adequate risk-benefit analyses are carried out at assessment and that medication, if given, is properly monitored, with regular reviews built into the process. Such reviews ought to include reliable measures of not only the behaviour for which the drug was given but also of those behaviours which the drug is known to affect.
References:


Duker, P.C., Van Druenen, C., Karel, J., Han, O. (1986). Determinants of


drugs in institution and the community residential facilities for mentally retarded


persons with mental Retardation? American Journal of Mental Retardation, 94,
596-602.

British Journal of Psychiatry, 142, 163-5.

Kalachnik, J.E., Harder, S.R., Kidd, Nielsen, P., Errickson E., Doebber M., and
reduction, neuroleptic non-reduction and non-neuroleptic history groups.

for the retarded In, Treatments for Psychiatric disorders. Washington DC,


retarded adults across community residential and vocational placements. Applied
Research in Mental Retardation, 6, 33-49.


ARE TESTS OF EXECUTIVE FUNCTIONING GETTING BETTER?

David Manchester
2002
Introduction

Despite recent developments in office based neuropsychological tests of executive functioning, neither the discriminant or ecological validity of these tests have improved significantly. It is argued here that their continued use for these purposes owes more to errors in judgement on the part of clinicians than to their actual utility. Included in these errors is a failure to distinguish adequately between clinical and statistical significance when interpreting test results and an underestimation of the base rate problem. In addition, clinicians generally fail to consider sensitivity and specificity separately when evaluating test scores, and demonstrate a low awareness of the only weak to moderate correlations ‘office-based’ executive function tests have with real-world behaviour. This paper addresses each of these areas, and discusses their implications for the future assessment of executive functioning. Finally, it stresses the importance of reliable behavioural observations, made in more ecologically valid environments than purely the consulting room.

The prefrontal cortex and executive functioning

Damage to the frontal structures of the human brain may lead to one or more changes across four broad areas. These areas have been classified by Stuss and Benson (1984, 1986) as cognitive, behavioural, motivational, personality and emotional changes. As these capacities are clearly involved in successful independent living, it is no surprise that some individuals with frontal lobe damage can lose the ability to perform daily life skills, and experience serious disruption to their personal, social and occupational lives.

Because the frontal lobes make up approximately one third of the brain, David (1992) points out that localizing disturbance to this region is akin to directing someone to an address marked Europe. Instead, it is more useful to talk about more specific functional regions and their behavioural correlates. Three main
areas have been established as having a reasonable degree of functional specificity, the orbital, dorsolateral and medial areas.

Orbitofrontal damage may result in impulsive, poorly controlled, emotional and socially inappropriate behaviour. Impaired attention and increased distractability is also associated with damage to this region (Malloy, Bihlre, Duffy and Cimino 1993). Event related functional imaging has shown mid-dorsolateral prefrontal cortex to be associated with the manipulation of information held 'on line' and is thus associated with executive memory (D'Esposito, Postle and Rypma 2000), whilst damage to the medial prefrontal area is associated with drive and attentional deficits. Patients with bilateral damage in this area, may be passive and exhibit little affect or sexual 'drive'.

Despite the research having led to the above associations being made, there is clear evidence that the types of difficulties attributed to the frontal lobe syndrome are not restricted to damage to frontal areas (Tranel, Anderson and Benton 1994). As a consequence of this it is more common now for these type of deficits to be grouped under the more functionally oriented heading of dysexecutive syndrome (Baddeley 1986, Baddeley and Wilson 1988).

Lezak (1982) has defined the executive functions as those mental capacities necessary for the formulation of goals; planning how to achieve them and carrying out those plans effectively. It is well established that impaired executive functioning can lead to massive disruption in everyday life, even when other cognitive functions are relatively unaffected. Because of this, the identification of impairments in executive functioning and their real world implications are two crucial questions that occupy neuropsychologists in the assessment of those with proven or suspected brain injury.

The assessment of executive functioning
The office-assessment of executive functioning has been notoriously difficult. Whilst many patients with frontal lesions and problems with executive functioning in everyday life do perform badly on tests thought sensitive to the executive functions, many do not (Shallice and Burgess 1991a, Eslinger and Damasio 1987, Cripe 1998). One of the most problematic aspects of assessment of executive functioning is that the actual testing environment typical to neuropsychological evaluation may be a poorly conducive arena for eliciting these deficits (Lezak 1982). Assessment is conducted in a quiet office, free of distractions and with a clinician co-ordinating test administration, explaining rules, setting goals, prompting and stopping behaviours. In addition, the nature of the standardised structure precludes multi-tasking or the setting of priorities for action. Thus, core deficits inherent in executive functioning, namely, establishing a functional framework to complete the operation, starting, stopping, tracking and switching, may be circumvented by the behaviour of the examiner, and the non-distracting consulting room environment. Wood (1987) has previously highlighted the discrepancy between cognitive performance obtained on testing in the office compared to real life situations in which the same abilities are required.

Nevertheless, office based assessment of executive functioning is routine practice in neuropsychological assessment. Two of the major questions that neuropsychologists are typically asked to address in this assessment concern the identification of dysfunction, and the everyday implications of this dysfunction once identified.

The discriminant validity of tests of executive function

A client's neuropsychometric test score is considered impaired when it falls within a particular range of scores that previous validation studies have indicated discriminate those with the condition from those without the condition.

When performance by a clinical group on a particular test is found to be
significantly different from that of a non-clinical group, this finding is often used to support the conclusion that the test is able to differentiate between groups. However this is not invariably the case. Statistical significance reflects the likelihood of a particular finding being observed by chance, it does not reflect the size of differences between groups nor does it indicate that the test can discriminate participants with sufficient accuracy for clinical use. This is a crucial distinction, and one that is often overlooked by researchers reporting the significance of their findings. As Elwood (1993) points out "Although tests of statistical significance may be useful in identifying group effects, they are often irrelevant to the clinical discriminations they are used to support."

Furthermore, discriminative validity studies often use equal numbers of persons with the condition, and controls without the condition. Thus, in these studies the base rate for the condition is often at, or around 50%. However, in most clinical situations this is unlikely to be the case. The base rate simply refers to the frequency with which something occurs. For a test to be clinically useful with regards to discriminant validity, its use must lead to greater classification accuracy than simply using the base rate prediction alone (Meehl and Rosen 1955). When base rates for the true condition begin to skew towards 0 or 1 diagnostic accuracy is reduced.

In order to appreciate why this is so, it is necessary to understand the concepts of sensitivity and specificity. Sensitivity refers to the true positive rate detected by a test, i.e. the number of people with the index condition who are correctly identified by the test as having that condition. Specificity refers to the true negative rate, i.e. the number of people free of the condition, who are so identified by the test. Unless a test has 100% sensitivity and specificity, any given score earned on that test can be either a true positive, a false positive, a true negative, or a false negative. The likelihood of each is determined by the base rate for the condition, and the combined error rate of that test (Gouvier 1998). A low base rate increases the likelihood of false positives coupled with an increase in true negatives.
Also, by reporting overall hit rates of a test, researchers can fail to convey low accuracy in identifying a target condition, because the high test specificity (i.e. high true negatives) masks this shortcoming. To illustrate this point consider the following example. Wildgruber, Kischka, Fassbender and Ettlin (2000) administered the Stroop Test to 24 participants with frontal lesions, and 23 controls. The results are presented in the contingency table below.

<table>
<thead>
<tr>
<th></th>
<th>True positive</th>
<th>False negative</th>
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<tbody>
<tr>
<td></td>
<td>N = 8 (30.8%)</td>
<td>16 (69.2%)</td>
</tr>
<tr>
<td>TYPE II ERROR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>False Positive</td>
<td>N = 1 (4.3%)</td>
<td>22 (95.7%)</td>
</tr>
<tr>
<td>TYPE I ERROR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the table it can be seen that The Stroop was very poor at discriminating the frontal lesion participants, in fact it was wrong two thirds of the time (false negatives 69.2%). However, it was very good at discriminating the control participants correctly (true negatives), and did so 95.7% of the time. Taken together, the overall hit rate for the test is over 60%. Although this is still not particularly high, it clearly masks the Stroop's very poor ability to reliably discriminate frontal brain injured participants.

The discriminative validity of traditional tests of executive functioning

Performance on many of the earlier tests of executive functioning has been shown
to correlate with prefrontal cortex activation (cf Andrewes 2001). However, as previously suggested, the issue is not solely are the frontal lobes involved in performance on these tests, but rather do these tests discriminate those with frontal lesions from those without such lesions?

A cursory look at some of those tests traditionally used for discriminative purposes suggests that they do not. The Wisconsin Card Sort (WCST) is one of the most popular tests of executive functioning. Despite its popularity as a measure of frontal lesions there is clear evidence that the WCST does not discriminate between clinical and non-clinical samples (Heinrichs 1990, Morice 1990, Wildgruber et al 2000). Nor does this test discriminate well between frontal and non-frontal brain injury patients (Anderson, Bigler, and Blatter 1995; Mountain and Snow 1993). There are also examples in the literature of individuals with gross frontal lesions and ‘frontal’ cognitive and behavioural abnormalities whose WCST performance has been normal or near normal (Eslinger and Damasio 1985; Anderson, Damasio, Jones and Tranel 1991).

Similar difficulties have been noted with the Stroop Test, with frontal lobe patients frequently performing well on this supposedly frontal test (Ahola, Vilkki and Servo 1996; Wildgruber et al 2000). Also, the Trail Making Test has failed to differentiate frontal from non-frontal participants (Reitan and Wolfson 1995; Burgess, Alderman, Evans, Emslie, and Wilson 1998), and brain injury from controls (Burgess et al 1998; Norris and Tate 2000). Finally, the Controlled Oral Word Association Test (a measure of verbal fluency) and the Cognitive Estimates Test both proved so remarkably insensitive to neurological pathology in a large validation study in the UK (Burgess et al 1998) that these researchers recommended against their future use as general screening devices. The inability of the CET to differentiate frontal lesions from non frontal lesions has also been noted elsewhere (Taylor and O’Carroll 1995).

The discriminative validity of more recent tests of executive functioning
More recently, cognitive neuropsychology research has led to the development of tests designed to investigate particular models of executive functioning. Shallice and colleagues devised several tasks to investigate cognitive abilities relevant to the theoretical construct of the Supervisory Attentional System (Shallice 1981). Two such tasks are the Hayling and Brixton tests.

*The Hayling Test:* In Part 1 of the Hayling Test participants are encouraged to establish a prepotent response. In Part II they must inhibit this response and substitute another more novel response instead. Thus, in principle, it is similar to the Stroop test. Patients with frontal lesions were found to be slower on both parts of this test in comparison with controls (Burgess and Shallice 1996).

*The Brixton Test:* (Burgess and Shallice 1997) borrows heavily from the WCST, and investigates a participant’s ability to abstract concepts and logical rules, and to alter behaviour in response to changing feedback. Shallice and Burgess (1996) found patients with frontal lobe lesions were impaired on this test. In addition they showed an abnormally high incidence of bizarre responses. However, a more recent study that adopted stricter criteria for the frontal group, and also involved a longer period post lesion before assessment failed to replicate these findings (Andres and Van der Linden 2001).

*The Behavioural Assessment of Dysexecutive Syndrome (BADS):* In perhaps the most significant advance in tests developed to assess executive functioning Wilson and colleagues devised the Behavioural Assessment of Dysexecutive Functioning. The test is based on the cognitive models of Frith (1992) and the concept of the central executive, and Norman and Shallice's concept the Supervisory Attentional System. The BADS consists of six tests each of which is designed to capture abilities considered central to executive functioning. A full description of the subtests is provided by Wilson, Evans, Emslie, Alderman and Burgess (1996).
Because persons with frontal brain injury and dysexecutive syndrome commonly underestimate their cognitive difficulties (Stuss 1991), the observations of others are of paramount importance in the assessment process. Reports of relatives, support workers, and/or clinicians who spend large periods of time with the client offer the advantage of eliciting information from those best placed to comment on real life difficulties. The BADS also contains a 20 item questionnaire designed to sample the range of problems commonly associated with the dysexecutive syndrome in everyday life. It addresses the four broad areas of change described by Stuss and Benson (1984, 1986), covering cognitive, behavioural, emotional and personality changes. The questionnaire has two versions, one of which is completed by a significant other (DEX-R), and one of which is completed by the participant (The DEX).

From the results of their validation study the test authors concluded that the overall BADS score was able to successfully differentiate the performance of participants with a brain injury from non brain injured controls (Wilson, Evans, Emslie, Alderman and Burgess 1998).

*Further considerations of the BADS:* Although the two groups in the BADS validation study differ significantly in scores, the clinical significance of this difference is less apparent. This is because the standard deviations for the two groups are of such a size that the performances of both groups overlap to some extent.

To illustrate this point, one simple level of analysis is to consider the proportion of brain injury participants who fall below the 5% level for controls, a common clinical indicator of pathology. Assuming normal distribution, 5% of controls will score less than a BADS profile score of 13. Indeed this is the cut off score recommended for the two younger groups in the manual. Obviously, using this as a cut off score correctly identifies 95% of the control group. Thus the test has high specificity. However, this cut off score means that 65% of the brain injury group are actually mis-classified as being non-brain injured, because only 35% of the
brain injured group would score below 13. Clearly, sensitivity can be increased by increasing the cut off score. However, in doing so specificity is weakened as more false positives occur.

The risk of making this Type II error (i.e. false negative) with the BADS is also seen in a further validation study conducted by Norris and Tate (2000). These researchers gave the BADS to 36 participants with neurological disorder and 37 non-brain injured controls. A sequential logistic regression analysis was conducted to determine the ability of the BADS variables as a set to predict group membership. The correct classification of non brain damaged participants was 83.8%, whilst classification for the brain injured participants was only 63.9%. Thus using BADS scores alone to identifying brain injury in this study would lead to the miss-classification of 36.1% of brain injured clients as non-brain injured. In addition, Sohlberg and Mateer (2001) have observed that in their experience the BADS is not sensitive to executive function impairments in relatively high functioning individuals (p113).

From correlations with neuroanatomy to correlations with function

One of the difficulties with the discriminant tests of executive functioning described above is that the variable used to determine validity is often the presence or absence of brain injury. However brain injury may exist in the absence of dysexecutive functioning. Thus, the dependent variable being used is possibly not the best one. It would make more sense to compare persons with frontal brain injury who are known to exhibit dysexecutive behaviours in the real world, with frontal patients who do not exhibit these behaviours. Tests of executive functioning could then be administered to see if these discriminate between the two groups.

The importance of this different type of approach is well illustrated in work by Baddeley, Della Sala, Papagno, and Spinnler (1997). These researchers utilised
a dual task paradigm that required participants to allocate resources to different tasks whilst at the same time avoiding interference. The performance of patients with frontal lesions was not significantly different to that of controls. However, when the frontal group was divided into those with evidence of dysexecutive difficulties in everyday life tasks (judged by relatives' observations and hospital notes), and those without such evidence, the performance of the former group was significantly worse than that of the latter.

This last issue addresses the relevance of test performance to real world behaviour. Because of this it concerns itself with the second type of validity to be considered here, that of ecological validity.

**Ecological validity**

Ecological validity has been defined as the functional and predictive relationship between a patient's performance on a set of neuropsychological tests and his or her behaviour in a variety of real world settings, such as home, work, school, or the community (Sbordone 1996). As far back as twenty years ago Heaton and Pendleton (1981) highlighted the need for more research into the associations between neuropsychological tests and everyday behaviour. They were not alone in the identification of this pressing need (Dodrill and Clemmons 1984, Guilmette, Faust, Hart, and Arkes 1990). Indeed, some have been strident in their criticism of neuropsychologists for failing to fully appreciate the lack of data supporting links between disability as measured by neuropsychological tests, and handicap in the real world (Faust 1991).

Cripe (1998) observed that a computer literature search of the PSYCHINFO database of studies from 1967 - 1992 did not produce a single study concerned with executive functions and everyday real world behaviour. Substituting frontal lobes for executive function yielded only one study. By 1996, in a review of the literature Williams (1996) noted only a low to moderate relationship between
neuropsychological measures and everyday skills, with Pearson correlations ranging from .2 to .5. A recent large scale study by Burgess, Alderman, Evans, Emslie and Wilson (1998) that investigated the ecological validity of 10 measures of executive functioning commonly used in the United Kingdom, noted a similar range (.30 to .54).

More recent tests of executive functioning

It needs to be remembered that none of the earlier tests used now for the detection of executive functioning deficits were initially designed with ecological validity in mind. Rather, these tests emerged when neuropsychological assessment was concerned primarily with discriminative validity and lesion localisation. Of the more recent tests used routinely in the UK for the assessment of dysexecutive functioning, studies are only now emerging with regards to ecological validity.

*The Hayling and Brixton Test:* Bajo and Nathaniel-James (2001) assessed 48 participants with the Hayling and Brixton Tests and the Dysexecutive Questionnaire. Participants were recruited through a Brain Injury Rehabilitation Unit out patient clinic. The majority had suffered moderate to severe traumatic brain injury. Independent ratings using the DEX-R cognitive factor scores were correlated with Hayling and Brixton performance. Hayling A (initiation) correlated with all three DEX-R factors (response suppression, intentionality, and executive memory) although only weakly (.21 to .28). Performance on the Brixton Test correlated significantly with the executive memory factor (.40). Hayling B did not correlate with any of the three factors (Bajo, personal communication).

*Behavioural Assessment of Dysexecutive Syndrome (BADS):* Wilson, Evans, Emslie, Alderman, Alderman, and Burgess (1996) compared the results of their participants on the six tests of executive functioning that make up the BADS battery with scores derived from the DEX and DEX-R. In order to assess
ecological validity comparisons were made only with the DEX-R scores as these were considered to be more valid than those of the client, given the deficits in awareness typically shown by this group.

Significant negative correlations were noted between the BADS and three DEX-R factor scores that were extracted by these researchers following preliminary factor analysis (labelled behaviour, cognition and emotion). The BADS total profile score was the best and only predictor of each of these component factors when compared alongside measures of intelligence, other frontal lobe tests, and age. In addition the overall relatives' DEX-R score correlated highly with BADS total profile score (-.62, p<.001). Thus performance on the BADS was the best single indicator of the presence of everyday problems attributable to executive dysfunction. Overall, other correlations ranged from -.31 to -.46.

The findings of Wilson and colleagues were only partially replicated in the later study by Norris and Tate (2000) discussed previously. Only one of the BADS subtests (Zoo) in their study correlated with the DEX-R completed by a close relative, and this was not in the expected direction. Three BADS subtests (Action, Zoo, and Six Elements) on which the neurological group performed significantly more poorly than controls, did correlate with scores on the Role Functioning Scale (RFS). The RFS samples behaviour in four domains (work, independent living and self care, immediate social network, and extended social network), and was completed by a case manager, or health professional who knew the client well. The combined scores of the three BADS subtests that discriminated between the brain injury and control group accounted for only 16.2% of the variance in role functioning.

**Discussion**

Tests of executive functioning have developed in sophistication over the last two decades, with recent procedures being based more firmly on cognitive
neuropsychological theories and principles. However, discriminant validity remains problematic, with more recent tests continuing to fail to identify a significant number of brain injured participants reliably. It seems clear that these tests ought not to be used routinely to infer brain injury unless scores are at the very extreme end of the continuum, and most certainly should not be used in isolation to rule out the presence of brain injury. With regards to ecological validity, with the exception of the BADS Total Score in the Wilson study, office based tests of executive functioning have continued to correlate only weakly to moderately with reports of real world behaviour.

Executive functioning is unlike any other cognitive process in that it is so richly steeped in the manner in which individuals interact with their environments, especially social environments. Isolating specific areas of cognitive functioning for standardised assessment clearly has its merits in terms of understanding the bases for many everyday problems. This is especially so, given the evidence for the fractionation of executive functions at the behavioural level (Burgess et al 1998). However, it is argued here that the correlation between such formal measures and everyday functioning is unlikely ever to be great. A significant factor in this equation, is the environment within which the individual functions. If it is supportive, unambiguous, goal directed, structured and routine, then there is less likelihood of persisting self-care, behavioural, emotional and social problems. This is because such environments make little demands on executive functioning. If on the other hand, the environment is chaotic, unsupportive, lacking in direction, and distracting, then greater problems may be expected.

One possible way forward for tests of executive functioning regarding ecological validity is to make assessments more life-like, and to use behavioural observations of structured tasks carried out in the real world setting. Naturalistic assessment procedures have been used extensively in the behavioural assessment literature and their contribution to clinical neuropsychology is being increasingly recognised (eg Franzen and Smith Seemiller 1998, Powell and Wood 2001). Qualitative assessment of this type does not necessarily mean a reduction
in objectivity. As Cripe (1998) observes "The use of direct observation, description and deductive analysis of themes can contribute significantly to an objective understanding of complex human phenomenon." p194. Clearly, the more life-like an assessment approach is, the more likely it is to reflect real world functioning. An example of one such approach is the Multiple Errands Task (MET) devised by Shallice and Burgess (1991b).

The MET is undertaken in a shopping complex, which is preferably unfamiliar to the participant. The participant is given three task sets comprising eight instructions, each of which has slightly different requirements. One task requires buying various goods, the other being in a certain place by a certain time, and the final task involves obtaining a particular type of information available in the precinct, such as the exchange rate for the French franc. The tasks are not presented separately but are rather subsumed within a general list of requirements. Rules are given such as entering only shops within a certain area, not entering a shop unless it is to buy something. Thus, it is up to the participant to structure, plan and execute the tasks efficiently. Shallice and Burgess (1991) found neurological participants who did well on standard tests of executive functioning were considerably worse than normal controls on the MET. Their performance was characterised by rule breaks and various behavioural inefficiencies.

Chevignard, Pillon, Pradat Diehl et al (2000) studied 11 neurological participants who showed evidence of dysexecutive deficits in daily life on the DEX-R. They compared the performance of these participants with 10 matched controls on standard tests of executive function and also and three more ecologically valid assessments; 'shopping for groceries', 'cooking' and 'answering a letter and finding a way to post the reply.' Each of the three naturalistic tasks was divided into two parts, script generation and script execution. In script generation participants were asked to write as many actions as they could think of relating to the task. In script execution, they were examined on their real world execution of these scripts e.g. actually going to the supermarket and shopping for
ingredients; cooking the cake in the kitchen, finding the route to post the letter.

Both script generation and script execution differentiated controls from neurological participants, with script execution being especially sensitive across all three tasks. Several of the standard tests of executive functioning also administered (WCST, Tower of London Test, Verbal Fluency) failed to differentiate the two groups at all. McCue and Aitken (1998) noted that even when standard executive function test scores are impaired they do not suggest the specific ways in which these deficits are manifested in everyday activities. In their own study using an adapted MET they found the MET results provided information regarding participants' naturalistic problem solving abilities they considered essential in rehabilitation planning.

The reports of significant others are likely to play an increasingly important role in the assessment of impaired executive functioning. Several structured rating scales and behavioural measures have shown early promise in the assessment of difficulties related to frontal brain injury. These include the Behavioral Dyscontrol Scale (Grigsby and Kaye 1992), the Frontal Systems Behaviour Scale (Grace and Malloy 2002), the Brock Adaptive Functioning Questionnaire (Dywan and Segalowitz 1996) and the Dysexecutive Questionnaire (Wilson et al 1996). The importance of the report of significant others is highlighted here by those papers that used the DEX-R as the measure by which to assess the criterion validity of executive function tests.

So as to increase its clinical utility, the DEX-R requires considerably more standardisation, including test retest reliability data, and investigations into the effects on scores of differing informants (i.e. spouse, parent, carer, sibling). Norris and Tate (2000) observed that close relatives of the participants completing the DEX-R in their study (where only one correlation was noted between test performance and DEX-R scores) were "extremely heterogenous". They concluded that it was difficult to be confident that all relatives had similar awareness of the participant's everyday functioning. Further research also needs to address the
differential effects of time since injury on these measures. In the Chevignard study (Chevignard et al 200), dysexecutive behaviour was not correlated with the answers of caregivers on the DEX-R behavioural scales, a finding the authors speculated may have been due to the lengthy period of time that had elapsed since injury. This time period, they suggested, may have led to significant others adjusting to the behavioural difficulties of their relatives.

Conclusion

The clinical utility of office based tests of executive functioning is likely to be greatest when these tests are used to generate hypotheses regarding executive difficulties noted in the real world. Indeed, in terms of informing rehabilitation approaches their use may be essential. The contribution of these tests to the identification of executive problems is more questionable, given their variable sensitivity and specificity, and their only low to moderate ecological validity. The initial identification of executive problems in everyday life is best achieved by more naturalistic assessment measures, in conjunction with the structured reports of significant others. If the above points can be integrated routinely into our clinical practice, then although tests of executive functioning may not be improving, at the very least our use of them may be.

References:


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Staff attributions for aggression, and the acceptability of psychological treatments in brain injury rehabilitation.

David Manchester

2002
### ABSTRACT

#### INTRODUCTION

1. Traumatic brain injury and its consequences
2. Aggression following traumatic brain injury
3. The treatment of aggression
4. Factors affecting the use of behavioural techniques
5. The role of attributions
6. Hypotheses

#### METHOD

1. Participants
2. Procedure
3. Administration
4. Statistical analysis
5. Materials

#### RESULTS

1. Treatment acceptability
2. Attributions

#### DISCUSSION

1. Treatment acceptability
2. Attributions for aggression
3. The relationship between attributions and treatment acceptability

#### REFERENCES

Appendix
Staff attributions for aggression, and the acceptability of psychological treatments in brain injury rehabilitation.

David Manchester

2002

ABSTRACT

Previous studies in learning disabilities and child psychology have shown that staff tend to rate non-aversive treatment procedures as more acceptable than aversive procedures in the management of behavioural difficulties. This paper investigates if a similar trend in treatment acceptability exists for staff working in brain injury rehabilitation. It also considers the prevalence of differing causal explanations amongst staff for aggression, in particular whether external attributions less common than an internal-personality attribution, and whether an internal-personality attribution leads to aversive treatments being considered as more acceptable. 113 staff participated in the study. Results indicated that patterns of treatment acceptability were consistent with previous research in other areas. External attributions were significantly more likely than the internal-personality attribution. Those staff who made an internal-personality attribution for aggression were significantly more likely to consider the most restrictive behavioural treatment approach as acceptable. Finally, psychotherapy was also included as a treatment option for the first time in this type of research. Psychotherapy was found to have the second highest acceptability rating of the nine treatments investigated. Implications for future research and clinical practice are considered.
INTRODUCTION

The need for a greater understanding of the variables that contribute to the use of aversive treatment procedures in brain injury rehabilitation has been borne out recently by the research of Fowles and Fox (1995). These researchers surveyed two hundred brain injury facilities across the United States, and noted a very common use of restrictive and pharmacologic interventions, often for extended periods with inadequate attention being paid to issues surrounding competency to consent as well as informed consent. The present study sought to investigate the acceptability of various treatments for aggression following brain injury including both aversive and non-aversive approaches. In addition, because attributions made by staff for behaviour are likely to influence acceptability of subsequent courses of action (Emerson, Hastings, and McGill 1993) staff attributions for aggression were also investigated, along with their relationships with treatment acceptability.

Traumatic brain injury and its consequences

Traumatic brain injury (TBI) has been defined by the National Head Injury Foundation as 'an insult to the brain caused by an external force that may produce diminished or altered states of consciousness, which results in impaired cognitive abilities or physical functioning' (NHIF 1989).

In Britain it is estimated that at least 600,000 people receive a head injury each year of such severity that medical treatment at a hospital is necessary (Richardson 2000; p.19). Most traumatic brain injuries result from motor vehicle accidents, and
tend to be sustained more by males than females. The majority of these men are under 30 years of age, and of these most will be between the ages of 15 and 24 years (NHIF, 1984). A greater than average proportion of those who sustain TBI have histories of drug and alcohol abuse, have poor academic performance records, have a higher rate of unemployment, and come from lower socioeconomic groups (Rimel and Jane, 1984).

Due to advances in emergency medicine, the number of people surviving severe head trauma has increased significantly over the last thirty years. With this increase has come a commensurate rise in the number of individuals exhibiting gross disability due directly to the neural trauma incurred. Depending on lesion location within the brain, cognitive impairment may vary considerably both in nature and severity. Whilst focal lesions such as those caused by penetrating head wounds can result in specific, circumscribed deficits, for example verbal memory disruption following dominant hemisphere temporal lobe damage, the pattern of deficit seen following diffuse traumatic brain injury can be far more diverse. A wide range of cognitive abilities may be affected including memory, attention, language, sensation, perception, reasoning, planning and self control (Groher 1977; Oddy, Humphrey, and Utley 1978; Brooks, Hosie, Bond, Jennett, and Aughton, 1986; Goldstein 1987; Shallice and Burgess 1991; Kapur 1994; Wood 2001). In addition to cognitive difficulties deficits also span behavioural and emotional realms (Stuss and Benson 1986; Damasio 1994).

Unfortunately, advances in the treatment of psychosocial difficulties following TBI have not mirrored those made in emergency medicine, and thus these impairments remain for
many at such a level that successful community re-integration is often prohibited. Indeed, whilst most clients with brain injury make good physical recoveries from their injuries it is impairments in cognitive and behavioural functioning that contribute most to long term vocational and social maladjustment (Bond 1984; Oddy, Couglan, Tyerman and Jenkins 1985; Wood 1987). As Ponsford (1995) has pointed out, this rapid growth in the number of people surviving TBI means many will be confronting their disabilities for decades in a society where most services for the disabled have traditionally catered to the elderly or those with congenital intellectual disabilities.

**Aggression following traumatic brain injury.** Perhaps the greatest behavioural impediment to any type of community re-integration following traumatic brain injury is the emergence of post injury aggression. Behavioural dyscontrol including aggression is a frequently cited long term sequelae of TBI (Lezak 1987; Miller 1994), and leads to extreme levels of stress and burden in those family members left to cope with the individual (McKinlay, Brooks, Bond, Martinage, and Marshall 1981; Livingston and Brooks 1998). In addition, there is evidence that such behavioural disturbances increase rather than decrease over time. In a group of 42 patients who had suffered blunt head injury with at least two days of post traumatic amnesia, after one year 15% threatened violence, and 10% had become violent. At five year follow up 54% had threatened violence and 20% had exhibited it (Brooks, Campsie, and Symington 1986). In addition, behavioural disturbances have been noted to persist up to 15 years after severe brain injury (Thomsen 1984).
It has been suggested that individuals who present with severe levels of aggression following TBI in rehabilitation facilities, and who are unable to look after themselves, tend in time to be cared for in less appropriate and often more restrictive environments, in the areas of psychiatry and learning disability (Eames and Wood 1985; Manchester, Hodgkinson, and Casey 1997). Although the behavioural typology of aggression may be similar between brain injury, psychiatry and learning disabilities, it is known that many contributing factors can be very different, including speed of onset, pre-morbid functioning, nature of psycho-social support, and concurrent cognitive and affective difficulties (Alderman 2001). Concomitant impairment in self awareness resulting from frontal injury can complicate the picture still further (Manchester and Wood 2001). Because of this, the treatment skills required may differ vastly, as may the rate and nature of patient response. Jackson and Manchester (2001) consider that with impaired reasoning and behavioural difficulties that isolate them from others, this significant subgroup may inhabit an aversive and poorly rewarding world, and that even when in rehabilitation they remain very vulnerable individuals.

**Types and causes of aggression following traumatic brain injury.** After TBI a large number of factors may interact to determine the probability of maladaptive behaviour. These can include pre-morbid behaviour and skill level, the nature of damage to the brain, as well as the cognitive, psychological, and physical sequelae of the injury (Ducharme 2000). Add to these the significant effect that the environment has on behaviour and it is clear that aggression following TBI can be multifactorially determined.
Similar to research into aggression with the non brain injured population (Blackburn 1993), research findings need to recognize the heterogeneity of perpetrators of aggression in individuals with brain injury. In an attempt to delineate specific subtypes of aggression following TBI researchers have sought to categorise aggression in this population. Three major types of aggression have been noted; these include episodic dyscontrol and the related concept of aggression as a result of mood disorder, or 'kindling'; aggression as a result of lowered tolerance for frustration following frontal brain injury; and aggression related to pre-morbid personality functioning.

**Aggression due to Episodic Dyscontrol Syndrome (EDS).** Analogous to the Intermittent Explosive Disorder of DSM-IV (APA 1994), EDS refers to a pattern of intermittent attacks of violence due to electrophysiological disturbances in the brain. Whilst not restricted to brain injury (it is considered to be due to other conditions as well such as epilepsy, learning disability, and psychosis), where brain injury has occurred the insult is commonly located in the medial portion of the temporal lobes. It is here that many limbic structures involved in the modulation of emotion and motivation are located (Miller 1993). The clinical presentation can be in the form of rapidly appearing severe aggressive outbursts that are often unprovoked, primitive in nature (e.g. spitting, flailing, scratching) and directed at the nearest available object or person. Outbursts are usually brief and are often followed by feelings of remorse (Wood 1987).

Less recognizable, but possibly more common is aggression associated with abrupt changes in mood which lowers tolerance for frustration, and has no clear precipitant. Thus, irritants that previously would not have elicited aggression do so now, resulting in outbursts of rage, which may leave the individual
feeling remorseful and bewildered. It has been suggested that this type of mood change is due to a slowly progressive build up of dysphoric feelings that occurs via electrophysiologic kindling. This leads to repeated stimulation of limbic structures, particularly the amygdala, producing a cumulative increase in excitability, along with an ever diminishing seizure threshold. This allows a final, even relatively minor event to incite the brain into paroxysmal activity with correspondingly uncontrollable behaviour (Miller 1993).

Aggression related to personality functioning. Even when neuropsychological impairments typically associated with aggression following TBI are present this need not be conclusive evidence that the brain injury has caused the aggression. Certain non-psychotic psychiatric disorders for which aggression may be a correlate are associated with particular neuropsychological deficits. Certainly, there is evidence to suggest that persons who exhibit antisocial behaviour without brain injury perform more poorly on tests thought to reflect frontal lobe pathology (Morgan and Lilienfeld 2000). Kay (1999) cautions that examiners evaluating persons with severe pre-morbid personalities ought to take into account that deficits revealed on testing may relate to a pre-existing personality condition. Certainly, those with Axis 2 disorders (including anti-social personality disorder) do appear to be over represented in the TBI population (Hibbard, Bogdany, Uysal, Kepler, Silver, Gordon, and Haddad 2000). It is plausible that the behaviour and lifestyle of many people with ASPD predisposes these individuals to brain injury and that the subsequent aggression is either a continuation, or exacerbation of pre-morbid behavioural patterns.
**Lowered tolerance for frustration due to frontal lobe brain injury.** The impulsive and often clearly disproportionate nature of the angry aggression that is most often seen following TBI, has led researchers to attribute this aggression type directly to impairments in behavioural regulation and inhibitory mechanisms. Damage to frontal regions of the brain often results in alterations in what have been termed the 'executive' functions of the brain. These executive functions consist of the ability to judge, plan, motivate and self-regulate, as well as the ability to alter ongoing behaviour in light of changing circumstances and feedback (Stuss and Benson 1986). Wood (2001) considers that the disruptive behaviours seen after TBI are most often found in the context of frontal injury and in particular orbitofrontal damage. Blumer and Benson (1975) used the term pseudopsychopathic to describe the range of behaviours that relate to orbitofrontal injuries, including irritable and facetious behaviour, lack of restraint, antisocial acts, and paranoid or grandiose thinking. As orbitofrontal areas of the brain are involved in the inhibitory control of maladaptive and inappropriate behaviours, damage to this area can result in behavioural episodes marked by bad temper, hostility and impulsivity (Volavka 1995).

In contrast to EDS, aggression resulting from injury to these frontal structures is usually marked by a clear precipitant (or trigger) to the episode, and the behaviour is directed towards the source. Once started the affect and behaviour escalate rapidly, beyond what others would consider a commensurate response and there appears to be no control on the part of the actor. Serious violence is rare, and the typology is often more akin to a tantrum, with shouting, swearing, and impulsive, non-protracted destruction of property. Insight and remorse are unusual (Miller 1993).
For the purposes of this study it is necessary to draw attention to a further distinction in the nature of aggression that has been made in both the head injured (Wood 1987) and the non-head injured population (Novaco and Welsh 1989). Novaco and Welsh (1989) have pointed to two distinct types of aggression that individuals may exhibit and assert that each differs fundamentally from the other. The first type, that of angry aggression, is consistent with the description outlined above, i.e. it is aggression that accompanies anger arousal. In brain injury this is the type most often exhibited, as emotional dyscontrol escalates rapidly over-riding disrupted inhibitory mechanisms. The second type of aggression, that of 'instrumental' aggression, is distinctive in that it need not be accompanied by anger. In instrumental aggression the most notable feature is that the aggression serves a particular purpose, is often planned and may be carried out with no particular emotional arousal on the part of the actor, e.g. the aggression of an armed robber. This is a useful categorisation in brain injury because the two types of aggression not only have different aetiologies and serve different functions, they also have different prognoses and treatment options, as expanded upon later on page under 'the treatment of instrumental aggression'.

THE TREATMENT OF AGGRESSION:

**Aggression due to Episodic Dyscontrol Syndrome (EDS).**

The role of medication in the management of aggression is indicated when there are clear biological determinants to aggression (as in EDS), and when the underlying pathology of these can be ameliorated pharmacologically. Commonly, anti-
psychotic and anticonvulsant medication are prescribed to address underlying neuropathology in EDS. Despite the fact that leading neuropsychiatrists (e.g. Silver and Yudofsky 1994) urge thorough assessment of all possible aetiologies for aggression in traumatic brain injury, it is likely that neuroleptic anti-psychotic medication is most often prescribed primarily for its sedative qualities (Manchester, Hodgkinson and Casey 1997). The use of these medications in learning disabilities far outweighs even the most conservative estimates of mental illness, and appears to be utilised for a host of socio-political reasons, rather than clinical need (for a review see Manchester 1993). A similar suggestion has been made for their use in brain injury rehabilitation (Fowles and Fox 1995).

**The treatment of aggression related to personality functioning.** The psychological treatment of aggression related to personality functioning, is undoubtedly problematic. A significant factor that coincides with this is that aggression related to personality functioning is often instrumental. Instrumental aggression is linked with antisocial, psychopathic or sociopathic personality disorder traits in the perpetrator. Where violence is instrumental and not necessarily a result of anger it is typically ego syntonic, i.e. acceptable to the actor. This is not to say that angry aggression cannot be ego syntonic also. The pattern of behaviour associated with antisocial personality disorder is repetitive and persistent, and typically includes assault, threatening behaviour, robbery and substance abuse. The individual is habitually deceitful and manipulative in pursuit of personal pleasure or gain. Although its symptoms may become less evident over time, the course of the disorder is thought to be chronic (Colman and Wilson 1997).
Howell (1998) asserts that the presence of psychopathic characteristics in a client is likely to be a contraindication for anger-management therapy. The history of the treatment of psychopathic disorder has been a disappointing one. In a major review Dolan and Coid (1993) concluded that research to date did not allow firm conclusions to be drawn about whether specific interventions worked or not. This lack of progress in the treatment of instrumental in the general population has been mirrored in that of the brain injured population. There is no evidence to suggest that TBI rehabilitation has been able to effect any greater change in individuals with psychopathic traits and aggression following TBI, than have the fields of general clinical psychology or psychiatry.

**Treatment of lowered tolerance for frustration due to frontal lobe brain injury.** In the general population cognitive behaviour therapy has been proposed as an effective treatment of aggression related to anger dyscontrol. Anger refers to an internal affective experience either in the immediate moment (state anger) or to the propensity to experience anger across time (trait anger). Aggression refers to behaviour that does, or could lead to injury to a person, object or social system (Deffenbacher 1996). Whilst both constructs can exist independently of one another as previously noted, it is clear that for the majority of individuals who do exhibit problematic aggression, anger is the typical emotional pre-cursor. Amongst the problematic behaviours that anger may presage are murder, violence towards children, marital violence, sexual offences and violence within psychiatric hospitals and prisons (Novaco 1994; 1997).
i. **Cognitive behaviour therapy.** It is because of the causative role that anger is felt to play in much aggression that psychological treatments for angry aggression have tended to focus on the amelioration of the anger experience itself. Deffenbacher (1996) notes that whilst neurological, temperament, endocrine and other physiological processes may influence anger, anger is best viewed as resulting from complex interactions between a) one or more eliciting stimuli; b) the individual's pre-anger state, and c) his or her appraisal processes. A fourth factor, that of existing behavioural skills might also be usefully added here, as recommended by Novaco and Welsh (1989). Although it is necessary to separate these variables for the purposes of assessment and treatment planning, it is recognized that they are interconnected, and that the relationship between all four is a dynamic one.

Recent psychological formulations of angry aggression have increasingly concentrated on the role that cognitions play in aggressive episodes. A fundamental tenet of the cognitive approach is that few events are approached in a novel manner by adults, and are instead processed through pre-existing schemata, consisting of enduring prior beliefs, knowledge and prepositions. It is helpful to reinforce here the importance of the attribution that is made for the anger eliciting event. Clore, Ortony, Dienes and Fujita (1993) consider that a necessary condition for anger to occur following an aversive event is that the individual judges the agent of the event to be blameworthy. A precondition for the judgement of blame to be made is that is that the action was intentional, made by choice and unfair. Beck and Fernandez (1998) have drawn attention to the tendency for attributions in those with anger difficulties to be marked by automaticity, hostility, personalisation and the individual's
tendency to assume he or she ‘knows’ what others are thinking.

Cognitive therapy thus focuses on helping individuals identify triggers to anger and to identify and ameliorate the maladaptive thinking patterns these give rise to. For instance, cognitive distortions may take the form of extreme and unreasonable personal rules, for example ‘it is intolerable that I be let down, or inconvenienced’ (Ellis 1977). By ameliorating cognitions it is contended that subsequent affect and behaviour are likewise altered. Typically, therapists help clients identify thinking distortions and generate alternative (more rational) interpretations of events (eg Hawton, Salkovskis, Kirk and Clark 1989). Clients may also be asked to set up behavioural experiments to test the validity of their automatic thinking and to disconfirm beliefs. Overall, there is general support for the effectiveness of cognitive therapy when delivered by competent therapists, covering a broad range of disorders in both the short and longer term.

**ii. Relaxation training and stress inoculation training.** More behaviourally focussed treatments have concentrated on relaxation training and behavioural skill building. Relaxation training aims at reducing physiological arousal and increasing the individual’s ability to tolerate anger inducing events. Clients are taught through progressive relaxation to identify signs of physiological arousal and to reduce autonomic arousal via a series of muscle tension/relaxation exercises, and controlled breathing techniques (Tyson 1998). As sessions continue relaxation skills taught become increasingly covert so that they may be used quickly and discreetly. As mastery is acquired clients may be encouraged to expose themselves to a series of ever more anger eliciting stimuli through a process of
systematic desensitisation, and therein to practice their newly acquired relaxation skills. The approach has been used successfully in brain injury (Lira, Carne, and Masri 1983).

iii Teaching behaviours with functional equivalence. When behavioural skill building is the focus of intervention the psychological formulation typically indicates that aggression is caused by lack of alternative and more appropriate behavioural skills for dealing with anger eliciting situations. A major focus is therefore on the teaching of alternative skills that allow individuals to achieve their aims in an adaptive and constructive manner. For example, assertiveness training to facilitate interpersonal skills, or parent training to improve child management skills (Deffenbacher 1996).

Taken together, there is reasonable evidence for the efficacy of cognitive behaviour therapy interventions for anger management in the non-brain-injured population (Novaco 1975; Moon and Eisler 1983; Suinn and Defenbacher 1988; Schlichter and Horan 1981; Deffenbacher, Story, Brandon, Hogg, and Hazaleus 1988). In a meta-analysis of the literature based on 50 studies incorporating 1,640 subjects, it was found that the average CBT recipient was better off than 76% of untreated subjects in terms of anger reduction (Beck and Fernandez 1998). Watt and Howells (1999) suggest caution in the interpretation of this result as four of the six studies were unpublished dissertations and thus not available for review. In their own study investigating the effects of a cognitive behavioural anger management programme with 50 violent offenders in Western Australia, there was little support for treatment gains relative to the control group participants. The authors suggest possible reasons for this as being low motivation of participants, poor programme integrity, insufficient
programme time, and the absence of screening assessment to ensure selection on the basis of anger rather than violence history.

**iv. Cognitive behaviour therapy for aggression in brain injury.** There has been a relatively strong advocacy for the use of general psychotherapy procedures in brain injury for several years, whilst recognizing the inherent difficulties mentioned earlier (Miller 1991; 1992; 1993; Prigatano 1991; Prigatano and Ben Yishay 1999; Judd 1999). The emphasis these proponents place on increasing the individual with brain injury's capacity for self-observation and how he or she constructs meaning from experience suggest they have much in common with cognitive therapy. Indeed Zastrow (1988) points out that nearly all contemporary approaches to psychotherapy have at their heart the basic principle of producing change by restructuring thinking. Despite the considerable literature generated on psychotherapy in brain injury there remains little evidence of its actual effectiveness in isolation, for those who display aggression.

Manchester and Wood (2001) have pointed out that clients who benefit from psychotherapy are typically expected to possess reasonable concentration, adequate memory, sufficient motivation, verbal intelligence and insight. In addition, those clients who have difficulty accepting and utilising interpretations may view psychotherapy as a burden (Lewis and Rosenberg 1990). Given that TBI can adversely affect any and all of these domains it is not surprising that people with organic brain syndromes have traditionally been considered unlikely candidates to benefit from standard cognitive therapy (eg Ludgate et al 1993; Kanfer 1997). Although suggestions have been made as to how at least some of these difficulties may in
be overcome (Manchester and Wood 2001), only a handful of case studies have addressed the use of CBT in this client group (McKinlay and Hickox 1988; Uomoto and Brockway 1992).

In an attempt to broaden this research base Medd and Tate (2000) evaluated a cognitive behavioural intervention for anger management difficulties for eight individuals with brain injury. Eight participants were allocated to a treatment group and eight to a waiting list control group. All had difficulties with anger control. Therapy ran over five to eight weekly individual sessions and was based on Novaco's self instructional training procedures. Initial sessions covered psychoeducation about the nature of brain injury and anger, and a middle phase increased participants' awareness of their own anger and its cognitive, physical and emotional correlates. The final phase involved practising various strategies to deal with an angry response, including relaxation, self instruction, cognitive challenging, assertiveness training, distraction and time out methods. Repeated measures analyses showed significant improvements between pre-treatment and post-treatment measures (immediate and at 2 month follow up) on the State Trait Anger Inventory. Interestingly, treatment effects did not generalise to self esteem, anxiety, depression or self awareness.

It is worth noting that although treatment appeared effective, twelve of those originally recruited to the study did not proceed with the therapy; one had poor neuropsychological performance, ten declined to participate and one failed to complete the treatment programme. Thus, whilst this approach appears promising the high drop out rate is clearly worthy of further investigation. Also, given that clients needed to demonstrate 'sufficient cognitive abilities' and to be free of
drug and/or alcohol dependency their representativeness of the general brain injury population is somewhat reduced.

v. Behavioural approaches to aggression in brain injury. In stark contrast to the paucity of evidence supporting the role of psychotherapy in the management of aggression following traumatic brain injury there is a wealth of research supporting behavioural interventions. Before advances in the application of behavioural strategies to the rehabilitation of behavioural dyscontrol in brain injury it was often the case, and in some regions probably still is the case, that persons with these difficulties were either discharged home into the care of unsupported families, or were cared for in psychiatric hospitals, or services for people with learning disabilities. This trend was in all likelihood maintained by a therapeutic pessimism prevalent at the time that residual deficits following brain injury were not amenable to rehabilitation, and that the most that could be hoped for was a level of supportive care that protected both the individual with the brain injury from others, and vice versa.

It was not until the pioneering work of Rodger Wood, a Psychologist, and Peter Eames, a Psychiatrist at the Kemsley Unit in Northampton, England (Wood and Eames 1981; Eames and Wood 1985, Eames 1988), that therapeutic behavioural approaches in the rehabilitation of the individual with severe brain injury began to be developed. These researchers and their colleagues accepted a priori that many of the behavioural difficulties exhibited following brain injury were due directly and solely to the injury itself, and related disturbances in affect control, cognitive functioning, disinhibition and impulsivity. However, they also proposed that many aspects of behavioural disturbance were learned behaviours that overlay the original
neuroanatomically-related deficits. It was this social learning theory approach that led to the development at the Kemsley Unit of a rehabilitation environment based on learning theory and principles. Within this learning environment, behaviours were subject to functional analysis, and hypothesis-driven interventions based on operant and classical conditioning paradigms. Thus, behavioural excesses were considered to be the result of reinforcement contingencies operating within the person’s environment that led to particular behaviours being strengthened, either because they resulted in a desirable consequence, or because they led to the removal of an aversive stimulus. Similarly, more acceptable behaviours had gradually been weakened either because they were no longer leading to desired outcomes, or because they were being followed by unwanted consequences.

Using behavioural principles for weakening unwanted behaviours such as extinction and punishment, and similarly behavioural approaches to increase wanted behaviours, such as negative and positive reinforcement, and chaining and shaping, these researchers were able to produce sometimes remarkable changes in the behavioural repertoires of severely brain injured individuals, many of whom presented with significant levels of aggression (Eames 1988; Eames and Wood 1985; Wood 1987; Wood and Eames 1981; Burgess, P.W., and Alderman, N. 1990). These approaches have proved successful elsewhere (Slifer, Cataldo, Roberta, Babbitt, Kane, Kelley, Harrison, Cataldo 1993; Manchester, Hodgkinson, Pfaff and Nguyen 1997; Manchester, Hodgkinson, and Casey 1997).

Overall, it appears clear that behavioural approaches practised within a structured neurobehavioural rehabilitation environment can produce significant decreases in aggression and that these
gains can be maintained at follow up. However, despite the considerable evidence to support the use of behavioural approaches in structured environments in the treatment of aggression as well as a range of other disorders, these are not routinely adopted in rehabilitation facilities (Manchester, Hodgkinson, and Casey 1997). Given that this means that an effective treatment may be being withheld from individuals in need of it, it is important to attempt to understand why such approaches are not routinely utilised.

FACTORS AFFECTING THE USE OF BEHAVIOURAL TECHNIQUES:

The problem of effective behavioural treatments being under-utilised is not restricted to brain injury. Whilst behavioural approaches incorporating social skills training, family education and token economies have all been noted to reduce symptoms in severe mental illness (e.g. Dobson, McDougall, Busheikin, Aldous 1995; Tarrier, Barrowclough, Vaughn et al 1988), researchers have found that such approaches are not regularly incorporated into rehabilitation programs (Corrigan, McCracken, Kommana, Edwards, and Simpatico 1996). It is in this area and that of learning disabilities that the majority of work on understanding factors that contribute to the apparent under-use of behavioural approaches has mostly been conducted. Thus it is to these fields that one must look to begin to understand those variables that impact upon the use of behavioural techniques amongst staff.

_The roles of staff expectations and staff burnout._ Expectations about how effective therapeutic interventions may be are recognized as an important factor that can influence
outcome (Kazdin and Wilcoxon 1976). Goldstein and Oakley (1985) point out that expectancies of outcome may determine not only which if any therapy is applied to a patient, but also how enthusiastically and vigorously that approach is carried out by staff. Corrigan, Williams, McCracken, Kommana, Edwards and Brunner (1998) suggested five factors that they felt contributed to staff utilising behavioural approaches with patients with severe mental illness; these included:

1. Institutional constraints: Administrative practices and budgetary limitations are perceived to result in inadequate resources to carry out behavioural practices.

2. Insufficient collegiate support: Staff perceive that colleagues are not interested in, or will not support behavioural programs on the unit.

3. Philosophical opposition: The belief that behavioural interventions are ineffectual, irrelevant or unethical for the care of severely mentally ill adults.


5. Collateral interference: Clients, other patients, and family members do not comply with or actively impede behavioural programs.

This research group (Corrigan et al 1996) also found that staff who are burned out are more likely to perceive barriers to implementing behavioural programs. Burnout was considered to result from uncontrollable work experiences leading to expectations of little reinforcement and frequent punishment.
In order to determine the actual direction of the relationship between burnout and negative attitudes Corrigan et al (1998) conducted a path analysis. They gave ninety nursing and clinical staff from five inpatient mental health facilities in Chicago The Barriers to the Implementation of Behaviour Therapy Test. This incorporates 18 statements reflecting the five factors mentioned previously; ie institutional constraints etc. Burnout was measured using Maslach’s Burnout Inventory, which consists of three factors; 1) emotional exhaustion, 2) depersonalisation, and 3) personal accomplishment. In addition participants completed a Modified Social Support Questionnaire, which investigated perceived collegiate support in work settings, and the Incentive Therapy Questionnaire, which measured day to day use of behavioural interventions, as well as involvement in treatment planning and procedure management.

Results indicated that high burnout leads to negative attitudes about behaviour therapy. Emotional exhaustion most influenced burnout in its effects on behaviour therapy attitudes. Thus those staff who felt most emotionally exhausted and overextended by their work were most likely to be pessimistic about behavioural programmes. Staff with experience with behaviour therapy were less likely to endorse negative attitudes about behavioural interventions. Current use of interventions appeared to be more important also. The authors suggested that to facilitate the use of behavioural programmes, classroom based educational based programs along with positive work place experiences with behaviour therapy ought to be incorporated at an organisational level.

*The role of staff behaviour.* In a slightly different approach, researchers in the field of learning disabilities have looked at the
dynamic effect that behaviours of clients and staff may have on one another, and how these subsequently might impact upon treatment choice. As Wilson, Reed and Bartak (1995) noted "Too much research has focussed on the resident as the target for behaviour change. More attention needs to be directed to the contingencies of reinforcement that control staff response to problem behaviour", p138.

There is clear evidence pointing to a link between care staff behaviour and the development and maintenance of challenging behaviour in this group (Hastings and Remmington 1994). The finding that a link exists between the two is especially important given that contemporary behaviour analytic accounts of challenging behaviour in people with learning disabilities have emphasised the social nature of such behaviours (Carr and Durand 1985). Felce, Repp, Thomas, Ager, and Blunden (1991) have observed that staff tend to respond at low rates to the majority of client behaviour in encouraging and discouraging ways. As a consequence it has been suggested that staff may be providing reinforcing consequences for challenging behaviours including aggression, and thus may actually be strengthening the behaviour over the longer term.

Hastings (1996), in a review of the literature examining self report studies of staff responses to challenging behaviours, noted that most responses were of a social nature: distracting, giving attention, verbal responses, restraint and seclusion. Given that many challenging behaviours may serve the purpose of acquiring social contact, the point is well made that staff responses may in fact be maintaining, over the long term, the very behaviours they are aimed at suppressing. Similarly, Wilson, Reed and Bartak (1995) observed staff responses to a range of problem behaviours including aggression, over a nine
month period in three community based homes for people with learning disabilities in Melbourne, Australia. It was found that staff often used several strategies one after the other in an attempt to stop a problem behaviour. Again, there was a heavy bias towards the use of verbal approaches. In each case the aim of staff was to stop the problem behaviour immediately, with no apparent consideration for the long term effects on target behaviour.

Given that many of the non-aversive behavioural procedures described earlier that lead to reductions in aggressive behaviour do so only gradually, it is possible that staff responses are themselves operating under tight reinforcement contingencies. Automatic (and reinforcing) responses on the part of staff are immediately reinforced for staff as the problem behaviour ceases upon presentation of the desired response ie social reinforcement, presentation of a wanted item, or removal of an unpleasant stimulus demand. This response thus strengthens the likelihood of the staff behaviour being evoked again by the presentation of the target behaviour by the client. More therapeutic responses in terms of their effect on long term behaviour are subject to a much more extensive delay in reinforcement (in terms of reduction in problem behaviour) and thus are less likely to be so rewarding. Indeed some procedures that are highly effective over the long term, such as extinction, often lead to an exacerbation in target behaviour initially which can actually be more aversive for staff.

In an attempt to investigate the issue of short versus long term response approaches more closely Hastings (1996) asked 109 care staff working in a large English institution for learning disabled clients about their immediate and longer term intervention strategies for a fictitious young man's challenging
behaviour. Three types of challenging behaviour were posited, stereotypy, self-injurious behaviour, and aggression. Again, it was noted that the immediate responses of staff were similar to the counter-habilitative responses noted previously. Although Hastings concluded that staff descriptions of long term intervention strategies were, in contrast, largely consistent with the aims of psychological interventions, closer scrutiny of the data render this point moot at best. In the case of aggression, although 74.3% of staff said that finding the cause was important, this is hardly in itself an intervention strategy. Similarly, having a management strategy is also described as important, but these are presented only superficially, and numbers endorsing the suggestions presented (ignoring, individual program plan meeting, relaxation, drugs) are not broken down. Similarly, calling in a psychiatrist or psychologist was rated by 20% of staff as a long term intervention strategy but again this is not strategy but rather an initial response. Of the two remaining suggestions by staff that can be considered strategies, involving clients in more activities was endorsed by only 20% while even more disconcertingly, normalising the client's lifestyle/living conditions was suggested by only 8.6%, and the provision of counselling for aggression was endorsed by nobody.

Overall, these results would indicate that when choosing for themselves staff tend to respond to problematic behaviour, including aggression, with responses that are likely to maintain that behaviour in the longer-term with a heavy emphasis on verbal responses. Furthermore, when specifically asked to generate longer term strategies, the majority of staff routinely fail to do so. Perhaps most worryingly of all is the apparent lack of appreciation for the effect that environment can have on behaviour, with less than 1 in 10 staff appreciating that a change
in lifestyle or living conditions may impact positively upon behavioural disturbance in the longer term.

**Knowledge of treatment.** The studies cited above have all concerned themselves with the treatment approaches that staff self generate in response to problem behaviour. It is possible that staff choose these options whilst rejecting others that they know of because they consider these more acceptable, or believe that these may be most effective. However it may also be that staff are simply unaware of alternative more effective treatment approaches and were they made aware of these would choose these instead.

**Acceptability.** A related but separate question concerns the acceptability of treatments that staff are presented with by others rather than are self generated. This question is arguably more relevant for two reasons, firstly in clinical practice it may be that staff do not choose effective procedures because they do not know about them, and secondly because in real world rehabilitation environments staff are often advised on particular approaches by consultant clinicians. If staff do not consider treatment suggestions as acceptable it is possible that they may chose not to implement the intervention.

Kazdin (1980) viewed treatment acceptability as one of a series of important dimensions of behaviour modification techniques that may impact upon treatment adherence, the others being treatment efficiency, side effects, discomfort, stress during treatment, the professional training required for administration, and cost effectiveness.
Acceptability of treatment has been viewed 'as a judgement about treatment made by lay persons, clients, and other potential consumers of treatment (which is) likely to embrace evaluation of whether treatment is appropriate for the problem, whether treatment is fair, reasonable, and intrusive, and whether treatment meets with conventional notions about what treatment should be' (Kazdin 1980 p261). Treatment acceptability is of considerable importance when one considers the fact that the most effective treatment may not be the most acceptable. As Kazdin points out, not only are treatments viewed as more acceptable more likely to be sought by consumers, they are probably more likely to be adhered to when initiated.

In order to assess treatment acceptability Kazdin developed the Treatment Evaluation Inventory (TEI). The TEI requires respondents to rate 15 items in a likert type format 1 - 7 point scale. The 15 items were selected on face validity because of their apparent relevance to treatment with children and the use of punishment. In the initial study four different approaches used in the treatment of behavioural problems were evaluated; these were reinforcement, time out from reinforcement, drug therapy and electric shock. Treatments were evaluated after participants listened to one of two cases where a child’s behaviour warranted treatment. Two different cases were used in order to ensure that evaluations were not restricted to unique characteristics of the stimuli material. One case dealt with oppositional behaviour at home by a 5 year old girl of normal intelligence, the other with disruptive classroom behaviour by a 10 year old learning disabled boy. The two behaviour problems were selected because they have both been subject to extensive behaviour modification approaches. Treatments were presented in a questionnaire and descriptions of each treatment were provided. Results indicated that treatments were clearly distinguished by
overall aversiveness. Reinforcement of incompatible behaviour was most acceptable followed in descending order by time out from reinforcement, drug therapy, and electric shock. Also, the more severe the behaviour problem the more acceptable was each treatment approach.

Research later went on to investigate the attitudes of those staff likely to implement such treatment approaches including teachers (eg Witt and Martens 1983) and parents (Frentz and Kelley 1986; Heffer and Kelley 1987). Generally the results of these studies tended to indicate that less restrictive (eg reinforcement based) treatments were more acceptable than more restrictive (ie punishment based) procedures. Secondly, all treatments have been noted to be more acceptable when applied to a severe behaviour problem than when applied to a mild problem. Thirdly, treatments are more acceptable when they have fewer side effects, and also when they are less time consuming (Miltenberger, Lennox, Erfanian 1989). These findings were replicated in another study that evaluated treatment acceptability for hyperactivity and aggression in children with learning disability (Singh, Watson and Winton 1987). In this study, using the Treatment Evaluation Inventory, mothers rated differential reinforcement of incompatible behaviour as most acceptable, whilst time out and drugs were considered the least acceptable.

In an extension of this research, Miltenberger et al (1989) assessed treatment acceptability in staff members working with people with a learning disability. They noted that unlike relatives, staff working in community based and institutional facilities are frequently asked to use behaviour modification procedures, and thus their acceptance of these procedures is of considerable importance. In one experiment using the Treatment Evaluation
Inventory, 72 staff members from 12 community residential facilities in North Dakota rated the acceptability of four treatments applied to two problem behaviours. Staff included direct care staff as well as those supervisory staff who were likely to make treatment decisions. Two problem behaviours in young adults were presented. One problem was considered mild because although disruptive it caused no problem to the client or others, the other was considered severe because it involved assaultive behaviour to others. The four treatment alternatives presented were (in order of ascending restrictiveness) differential reinforcement of other behaviour (DRO), exclusionary time out, oral hygiene overcorrection, and contingent electric shock.

As in previous research, staff rated the least restrictive procedures as most acceptable. In addition DRO was significantly more acceptable when applied to the mild than to the severe behaviour problem. Interestingly, no significant differences were noted between the ratings of the direct care staff and the supervisory staff. In a second experiment 40 staff members from two large institutions in New York followed the same procedure as in experiment one. Again staff rated acceptability in accordance with degree of restrictiveness, with the least restrictive approach being rated as the most acceptable. As in experiment one, DRO was rated as significantly less acceptable for the severe problem than for the mild one, and again no differences emerged between direct care, and supervisory staff.

Thus, to date the findings on the acceptability of treatment to lay students, parents, direct care staff and supervisory personnel are reasonably consistent. Non-aversive procedures such as differential reinforcement of incompatible behaviour are most acceptable followed in descending order by approaches that
increase in aversiveness. The use of medication and electric shock are generally seen as least acceptable. The more severe the behavioural problem is the more acceptable the aversive procedures become.

It is the last point that forms the basis for this research. Why is it that more aversive procedures are viewed as more acceptable for more severe behaviours? One possibility is that respondents are referring to a body of knowledge that suggests these approaches are more effective. However this is unlikely given the skill base of most respondents, and the fact that the available research does not support this contention. Another possibility given the social nature of aggression and borrowed from the social psychology literature is that staff ask themselves why the person is aggressive and answer this question themselves; in other words staff make an attribution as to the cause of the behaviour. Once this attribution is made it goes on to influence treatment choice and acceptability.

The role of attributions

The Fundamental Attribution Error (FAE). The FAE (or correspondence bias) refers to the observation in social psychology of our tendency to over-emphasise the importance of personality characteristics or dispositions in others when accounting for their social behaviour, and to underestimate the effect of social variables (Ross 1977; Gilbert and Malone 1995). In their classic study demonstrating how robust the FAE is Jones and Harris (1967) asked participants to read essays that were either for or against Castro’s regimen in Cuba. Participants were told the essays had been written by political science students. Half the participants were told the writers had freely chosen the
position their essays espoused, whilst the other half were told
the writers had been instructed to write from that viewpoint.
Participants were asked to judge the essay writer's true position
in both conditions. Not surprisingly authors in the free choice
condition were assumed to be writing in accordance with their
own bias, i.e. pro Castro papers reflected the writer's pro Castro
views, and vice versa. However, authors in the enforced
condition were also considered by participants to be writing from
their own viewpoint, despite participants having been told the
views expressed in these essays were allocated to them by the
experimenters.

In the clinical arena Morgan and Hastings (1998) investigated
the attributions given for challenging behaviours by special
educators working with children with learning disabilities. Sixty
teachers and teaching assistants working in thirteen different
schools in two southern English counties returned questionnaires
in which two vignettes were described. Each vignette described
a fictitious child's challenging behaviour and contained
information about the function of the child's challenging
behaviour. In both vignettes the child's behaviour was presented
in such a way as to indicate clearly to someone with an
understanding of reinforcement contingencies that responses
within the environment were maintaining the behaviour. One
vignette depicted a child whose behaviour was likely to be
serving the function of task avoidance, whilst in the other it was
likely to be serving the purpose of attention seeking. The
attributions of staff were elicited by asking open ended
questions. The authors concluded that only 30% of respondents
correctly identified the function of the behaviour in the task
avoidance vignette, while less than 10% correctly identified the
function in the attention seeking vignette.
One possibility for our tendency to exhibit the FAE is that we routinely fail to take situational pressures into account because we fail to appreciate them. Because we do not realize how powerful the situation is we do not understand that most people who find themselves in it would behave in a similar way (Kunda 1999). However even when we are aware of situational constraints the FAE and is still likely to occur if the mental resources needed to take account of these constraints are stretched (Kunda 1999). In the example of aggression, when an individual is aggressive observers are likely to engage in a person perception process involving three phases covering categorisation, characterisation, and correction. In categorisation the behaviour is considered ‘aggressive’; in characterisation the actor is considered an ‘aggressive person’; in correction situational factors are taken into account. Gilbert, Pelham and Krull (1988) consider the first two phases to be relatively automatic cognitive processes, whilst the third is a more controlled process requiring more substantial cognitive processes. Because of this it is likely to be disrupted by an increase in cognitive load.

To test this Gilbert et al (1988) drew on the study design of Jones and Harris (1967). Participants were asked to listen a speech given by a student that was either pro- or anti-abortion, and that he had been told to write. Half the participants just listened, whilst the other half were led to expect that they too would be required to give a speech later. Because those asked to give a speech later would be expected to be mentally rehearsing their own speech it was assumed that their cognitive resources would be stretched whilst listening to the speech of the student. With stretched cognitive resources these participants ought to be less able to take into account the situational constraints on the student, and therefore be less likely
to correct their initial attributions. This was precisely what they
found. Whilst the correspondence bias was evident in both
groups, it was much more evident in the group whose cognitive
resources were stretched.

**Emotions in attributions.** Aggressive behaviour provokes
reactions in others, and a major component of these reactions is
that of emotion. Attribution theory as conceptualised by Weiner
deals extensively with the constructs of causal responsibility, and
causal intentionality (Weiner 1986). According to Weiner
responsibility attributions and behaviour are linked by the
mediating influence of emotion. Thus when actors are perceived
as not responsible for negative outcomes pity and help are
elicited from the observer, and when they are considered
responsible anger is elicited, help is withheld and retaliation is
invoked. Thus, attribution theorists posit a thought emotion
action sequence, wherein observers cognitively infer causality,
respond emotionally to this inference, and in turn respond
behaviourally to this emotion. This mediational model of emotion
in attribution theory has been supported empirically in both the
adolescent population (Graham, Hudley, and Williams 1992),
and in the learning disabled population (Baker and Bramston
1997).

Another factor that points to the contributing role that emotion
plays in our reactions to a negative event is the effect mitigating
information has on anger and subsequent aggression. It has
been suggested that the level of anger aroused by provocation
can be mediated by information concerning the degree to which
harm was malevolently intended (Ferguson and Rule 1983). If
this is the case it is reasonable to assume that information given
early in the appraisal process should have the greatest impact
on attributions and anger. To investigate this Johnson and Rule (1986) gave one hundred men one (of two levels) of mitigating circumstance information after being insulted or not insulted by a co-worker. Participants were then given the opportunity ostensibly to deliver aversive noise to the co-worker. These researchers found that when participants were given mitigating information before rather than after being insulted they tended to view their provocateur more favourably, exhibited smaller increases in physiological arousal and retaliated less than when mitigating information was presented afterwards. Similarly, Zillmann and Cantor (1976) found that only those participants who learned of mitigation before insult reduced aggression toward the frustrator.

In the field of learning disabilities challenging behaviour has been noted to produce a number of emotional reactions among staff, including fear, irritation, anger and disgust (Bromley and Emerson 1995). As this is the case, attributional theory would indicate that behaviour seen as aggressive is likely to lead to an attribution of intentionality, which in turn is likely to evoke anger on the part of the observer. Staff who become angry following internal attributions for aggression are more likely to be motivated to respond in an aggressive manner. If one considers aversive behavioural procedures as in part being aggressive acts, then it is likely that those staff who make internal attributions (i.e. it is his personality that makes him do this, he did it on purpose, and he can control it, versus it is the situation, he cannot control it) are more likely to consider aversive procedures as acceptable.

Bromley and Emerson (1995) reported on the emotional reactions of 70 staff in the North West of England to episodes of challenging behaviours exhibited by clients with learning disabilities in their care. They also investigated the constructs
used by staff to understand a person's challenging behaviours, and the perceived causes of stress involved in caring for persons with challenging behaviour. Staff were asked to indicate on a questionnaire what proportion of the full staff group usually felt anger, annoyance, despair, disgust, fear and sadness in response to the person's challenging behaviour on a five point scale. These researchers chose not to ask staff to report their own feelings in an attempt to minimise bias due to the possibility of staff being unwilling to self-report. Staff were also asked in an open ended question why they believed actual service-users showed challenging behaviours. The responses to this were grouped into 11 distinct categories reflecting all the causes identified.

In the analysis of their data Bromley and Emerson noted that the most typical emotional responses of staff to aggression were annoyance, sadness, anger and despair. Staff were most likely to report anger if the behaviour was more severe, the person showed evidence of psychosis, and there appeared to be no effective way of dealing with the behaviour. Although they did not directly test for this, these researchers noted that such emotional reactions may mitigate against the provision of effective support. In particular they highlight the possibility that staff eager to terminate an episode as quickly as possible may inadvertently reinforce, and thus strengthen, the very behaviour they find so problematic. Further, they postulated that non-aversive procedures which require staff to tolerate or ignore challenging behaviour may be less likely to be implemented. Interestingly Bromley and Emerson noted that the more serious challenging behaviours were, the more likely they were to be attributed to the person's internal psychological state, while less serious behaviours were more likely to be seen as self-stimulatory. The citation rate of 41% for internal psychological state being the
cause of challenging behaviour is clearly far above that given for current situational determinants (26%).

In sum, research into attributions indicates that people have a tendency to over-emphasise the role of personality dispositions, whilst discounting situational variables, when accounting for the negative behaviour of others. This fundamental attribution error or correspondence bias appears to happen relatively automatically and can be maintained in the face of evidence to the contrary, especially when cognitive resources required to process counter evidence are overstretched. Internal attributions have been found to increase anger arousal and subsequent retaliatory behaviour. Whilst mitigating evidence can reduce angry arousal, it tends to reduce subsequent aggression only when presented prior to provocation.

In keeping with this research, staff that manage clients who display aggressive behaviour have been found to greatly underestimate environmental contingencies that maintain behaviour; to make a high number of internal attributions for aversive behaviour; and to regularly rate aversive treatment procedures as more acceptable for more aggressive and disruptive behaviours. This study aims to investigate how prevalent internal attributions for aggression are in staff working in brain injury rehabilitation and how acceptable different treatment procedures are to these staff.

Because attribution theory considers inferences regarding controllability and responsibility to have differing effects upon emotional and behavioural reactions in observers (Weiner 1986) this study investigates perceived controllability separately. It is possible that staff may perceive aggression as controllable, but that this inference does not go on to trigger anger because staff
do not consider the patient responsible for the cause of the aggression. For example the client who becomes aggressive following unwarranted provocation, may be seen as able to control this behaviour, but does not evoke anger because he is not seen as responsible for the provocation.

In order to test for a possible difference between controllability and responsibility inferences, this study included two different types of internal attributions. One internal attribution was the Brain Injury itself. This was an internal attribution for which the individual would be less likely to be held responsible. Another attribution was the individual's pre-morbid personality. It was expected that this internal attribution (in keeping with attribution theory) would be more likely to be considered the client's responsibility.

The three remaining attributions were all externally oriented and included provocation, a dull and boring environment, and social reinforcement.

The hypotheses for the study are detailed below;

**Hypothesis 1.** In keeping with research in learning disabilities and clinical child psychology, least aversive treatments will be significantly more acceptable than aversive treatments.

**Hypothesis 2.** Clinician participants will not differ from non-clinician participants in their ratings on treatment acceptability for behavioural treatments.

**Hypothesis 3.** Experience will correlate positively with acceptability of non-aversive behavioural treatment options.
Hypothesis 4. An internal-personality attribution for aggression will be more likely than external attributions.

Hypothesis 5. Clinician participants will be less likely than non-clinician participants to attribute TR’s aggression to the internal-personality attribution.

Hypothesis 6. Perceived Controllability will be positively associated with the internal attribution Personality.

Hypothesis 7. Internal-personality attributions will correlate positively with aversive treatment options.
METHOD

Participants

One hundred and thirteen staff working in six brain injury rehabilitation units participated in the study. Three units were hospital based sub acute rehabilitation wards, one in the United Kingdom, and two in Sydney Australia. Twenty participants were in Australia. Of these, four worked in a community team attached to the sub-acute ward. Three units were post acute community based neurobehavioural rehabilitation units, all based in the United Kingdom. Twenty seven participants were clinicians with qualifications in either medicine, social work, psychology, physiotherapy, or occupational therapy. Twenty of the clinicians worked in the acute hospital settings. Eighty six participants were direct care staff with either no qualification in a health related subject, or held a nursing qualification. Thirty three were male, and seventy three were female (seven missing). Mean experience was four years (range <1 - 20 years). Mean age was thirty five years (range 20 - 64 years).

Procedure

Administration

In four of the units staff were approached at the beginning of clinical team meetings. It was explained that the study was examining staff beliefs about the likely causes of aggression following traumatic brain injury and the acceptability of different treatment responses. All staff were assured of anonymity. Participants in these four units completed the questionnaire at the end of the meeting, and handed them back to the researcher. In two of the units questionnaires were again distributed in clinical meetings, but were completed later and returned to the researcher by post (in one unit) and via a Consultant Neuropsychologist (in one unit).
Statistical Analysis

Completed data was input into an SPSS (version 10) database in preparation for analysis. Exploratory data analysis revealed that three of the attributions and six of the treatment options were moderately to severely negatively skewed. Reflect and square root transformations and reflect and logarithm transformations normalised the distributions on a further five of these, however four variables remained too skewed for parametric analysis. Comparisons between groups also skewed distributions again. For clarity and consistency it was therefore decided to use nonparametric analysis throughout. For correlations Spearman’s correlations were used, and for differences between groups, Friedman Tests and Mann Whitney U Tests were used. It is noted that whilst parametric analyses are considered more powerful in studies of this kind the use of non-parametric analyses with this type of data is recommended by some statisticians (Coolican 1994, p 377).

Materials

The Treatment Evaluation Questionnaire was given to all participants (see appendix A). The TEQ was designed by the researcher for the purpose of this study and has two parts, A and B. Before completing both parts participants read the following brief vignette describing a client TR who displays aggression.

“TR is a 29 year old brain injured man who sustained a Brain Injury over two years ago. When he is calm, he is generally pleasant, interacts well with staff and other clients and seems to like staff attention. His main problem is occasional aggressive outbursts towards other clients and staff when he is angry. His outbursts involve swearing, yelling, threatening, door slamming, and occasionally pushing people. The outbursts are disruptive to his rehabilitation routine. He averages 5 to 8 outbursts a day. Staff are concerned about these outbursts and consider a special programme to be necessary.”
The vignette describing TR is necessarily brief. Background details covering context and possible cues for aggression are deliberately omitted. This is to ensure that staff are not guided in any particular direction when making attributions. Instead they must rely on their own understanding of likely causes for aggression in this client group. Providing more detailed information may affect automatic processing as extra information comes to be viewed as mitigating circumstances. The provision of as little information as possible increases the probability that staff will base their responses on available heuristics regarding aggression in this client group.

**Attributions.** In Part A participants are asked to indicate on a scale of 1 (highly unlikely) to 7 (highly likely) the likelihood of each of five possible causes as having contributed to the aggressive behaviour. Three attributions are external (a boring environment, social reinforcement, and provocation), and two are internal (the brain injury/a physical illness, a previously aggressive personality).

**Perceived Controllability.** At the end of Part A participants are asked to indicate on a scale of 1 (highly unlikely) to 7 (highly likely) how likely they think it is that TR can control his aggression if he really wants to.

**Treatment Acceptability.** In Part B participants are presented with nine treatment options consisting of behavioural approaches, verbal approaches, and medication. Three of the behavioural approaches are non-aversive, Differential Reinforcement of Other Behaviour, (teaching behaviours) with Functional Equivalence, and Establishing Operations. The definition for the term non-aversive as it is used here is that the treatment is not physically restrictive or intrusive and is based on operant learning principles of positive reinforcement and/or differential reinforcement of other or incompatible behaviour. Differential Reinforcement of Other Behaviour and Functional Equivalence meet this criteria. Establishing Operations is considered non-aversive, as it is not restrictive and is based on the non-contingent positive manipulation of the environment to establish drive and motivation (McGill 1999).
Three of the behavioural treatments (Seclusion, Punishment, Time Out On The Spot) are considered aversive as they are to differing degrees each restrictive, and are based on operant learning principles of extinction and punishment. Medication is also considered aversive as it impairs behavioural repertoires, and has attendant side effects.

The verbal responses Reassurance and Psychotherapy are considered non-aversive as they are not based on operant principles related to extinction and punishment.

For each of the nine treatment options participants are asked to indicate on a scale of 1 (highly unacceptable) - 7 (highly acceptable) how acceptable they consider each treatment to be for TR.

RESULTS

Results are divided into four subsections. Firstly, treatment acceptability is examined to determine if level of aversiveness affects acceptability; to determine if clinician participants differ from non-clinician participants in their treatment acceptability ratings; and to examine if years experience is related to treatment acceptability. Secondly, attributions for aggression are analysed for all participants, and differences between clinicians and non-clinicians are examined. Thirdly, perceived controllability is analysed, and it’s relationship with both attributions and treatment acceptability is calculated. Fourthly, the relationships between attributions and treatment acceptability are reported.

Treatments

Within each of the 9 treatment options Helpfulness, Willingness, and Acceptability all correlated with one another at the .05 level. Further correlation
analysis was conducted for each of the three variables for 8 treatment options (Psychotherapy did not include a measure of willingness to carry out the treatment because most respondents would not be qualified to do so, so only Helpfulness and Acceptability were calculated for this measure) and the five attributions. Because this entailed 156 correlations it was felt that a significance level of .05 would yield an unacceptably high number of chance positive correlations. Therefore, a significance level of .01 was used. Spearman correlations revealed that Helpfulness, Willingness and Acceptability for each of the treatment options all showed exactly the same pattern of significant correlations with the five attributions, and also with Perceived Controllability. It was therefore assumed that these three ratings were measuring essentially the same construct. Thus only one of the ratings ‘Acceptability’ is used in the following analyses.

It is necessary to note throughout this thesis that the carrying out of multiple tests makes Type 1 errors more likely. In fact, because of the high number of correlations involved in comparing Helpfulness, Willingness and Acceptability ratings, were the analysis to be especially stringent in this case, a p value of .0003 would be more acceptable.

**Treatment Acceptability**

**Hypothesis 1.** In keeping with research in learning disabilities and clinical child psychology, least aversive treatments will be significantly more acceptable than aversive treatments. This hypothesis was partially supported.

Acceptability of treatments was examined for all participants (N=113). Median and mean scores can be seen in table 1. Functional Equivalence was rated as the most acceptable treatment option, followed in descending order by Psychotherapy, Differential Reinforcement of Other Behaviour (DRO), Time Out on the Spot (Toots), Establishing Operations, Seclusion, Reassurance, Medication and Punishment.
Table 1

Mean and median scores for treatment acceptability for all participants on each of the nine treatment options.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Median</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Equivalence</td>
<td>7</td>
<td>6.47</td>
<td>0.93</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>7</td>
<td>6.39</td>
<td>1.08</td>
</tr>
<tr>
<td>DRO</td>
<td>6</td>
<td>6.17</td>
<td>1.26</td>
</tr>
<tr>
<td>TOOTS</td>
<td>6</td>
<td>5.95</td>
<td>1.44</td>
</tr>
<tr>
<td>Establishing Operations</td>
<td>6</td>
<td>5.56</td>
<td>1.73</td>
</tr>
<tr>
<td>Seclusion</td>
<td>6</td>
<td>5.44</td>
<td>1.64</td>
</tr>
<tr>
<td>Reassurance</td>
<td>5</td>
<td>4.66</td>
<td>2.16</td>
</tr>
<tr>
<td>Medication</td>
<td>4</td>
<td>4.23</td>
<td>1.70</td>
</tr>
<tr>
<td>Punishment</td>
<td>5</td>
<td>4.01</td>
<td>1.99</td>
</tr>
</tbody>
</table>

With the exception of Medication, all treatments were endorsed as acceptable by the majority of participants. Thus, most participants rated each of the other eight treatments as being either slightly, moderately, or highly acceptable (i.e. were rated as 5, 6, or 7). Functional Equivalence was rated by 95.6% of participants within this range, Psychotherapy by 90.3%, Differential Reinforcement of Other Behaviour by 90.3%, Time Out On The Spot by 77.9%, Establishing Operations by 76.4%, Seclusion by 65.5%, Reassurance by 58.4%, Medication by 47.8%, and Punishment by 53.6% of participants.

Just taking the results for those participants who rated treatments as either moderately to highly acceptable yielded the following frequencies, Functional Equivalence (65.5%), Psychotherapy (67.3%), Differential Reinforcement of Other Behaviour (49.6%), Time Out On The Spot (77.9%), Establishing
Operations (66.4%), Seclusion (77.9%), Reassurance (48.7%), Medication (28.3%), and Punishment (28.6%) respectively.

A Friedman test showed that treatment acceptability varied significantly across the 9 treatment options (chi-square = 270.06, df = 8, N=109, p<0.001, two tailed).

In terms of the most acceptable, and the least acceptable treatments, hypothesis 1 was supported, i.e. the most acceptable treatments were nonaversive (Functional Equivalence, Psychotherapy and Differential Reinforcement of Other Behaviour), and the least acceptable treatments were both aversive/restrictive (Medication Punishment).

However, the four treatment options in the mid range of acceptability did not follow the predicted trend. Noticeably, Time Out On The Spot was rated as more acceptable overall than Establishing Operations, and Seclusion was rated as more acceptable than Reassurance. In order to determine if these differences were significant Wilcoxon Signed Ranks Tests were conducted between both these pairs of treatments. Time Out on the Spot did not differ significantly from Establishing Operations (z=1.612, N-ties = 36, p = .107, two tailed), however Reassurance was considered significantly less acceptable than Seclusion (z = -.2.974, N-ties = 79, p = .003, two tailed).

**Hypothesis 2.** Clinician participants will not differ from non-clinician participants in their ratings on treatment acceptability for behavioural treatments. This hypothesis was supported.

In order to determine if clinicians differed significantly from non-clinicians in their ratings on treatment acceptability, the two groups scores were compared for each of the 9 treatment options. The respective medians, means, and standard deviations for both groups can be seen in table 2.
Table 2

Median, mean and standard deviations of treatment acceptability for clinician and non-clinician participants on each of the 9 treatment options.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Median</th>
<th>Mean</th>
<th>Std Deviation</th>
<th>Median</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRO</td>
<td>6</td>
<td>6.37</td>
<td>0.68</td>
<td>7</td>
<td>6.10</td>
<td>1.38</td>
</tr>
<tr>
<td>Seclusion</td>
<td>6</td>
<td>5.48</td>
<td>1.50</td>
<td>6</td>
<td>5.43</td>
<td>1.68</td>
</tr>
<tr>
<td>Punishment</td>
<td>4</td>
<td>3.70</td>
<td>1.83</td>
<td>5</td>
<td>4.10</td>
<td>2.03</td>
</tr>
<tr>
<td>Functional Equivalence</td>
<td>7</td>
<td>6.37</td>
<td>0.88</td>
<td>7</td>
<td>6.51</td>
<td>0.94</td>
</tr>
<tr>
<td>Establishing Operations</td>
<td>6</td>
<td>5.59</td>
<td>1.75</td>
<td>6</td>
<td>5.55</td>
<td>1.72</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>6</td>
<td>5.59</td>
<td>1.47</td>
<td>7</td>
<td>6.63</td>
<td>0.78</td>
</tr>
<tr>
<td>Medication</td>
<td>4</td>
<td>3.96</td>
<td>1.50</td>
<td>5</td>
<td>4.31</td>
<td>1.75</td>
</tr>
<tr>
<td>Reassurance</td>
<td>4</td>
<td>3.62</td>
<td>1.98</td>
<td>6</td>
<td>4.98</td>
<td>2.06</td>
</tr>
<tr>
<td>TOOTS</td>
<td>6</td>
<td>6.14</td>
<td>0.90</td>
<td>6</td>
<td>5.88</td>
<td>1.56</td>
</tr>
</tbody>
</table>

Mann Whitney U Tests revealed a significant difference in acceptability between clinicians and non-clinicians for only two treatment options. Both Psychotherapy (U = 640.500, N1 = 27, N2 = 86, p=.001, two tailed) and Reassurance (U = 727.000, N1=27, N2 = 86, p = .01, two tailed) were considered significantly more acceptable by non clinicians than clinicians. The difference is most clearly seen graphically, when treatment acceptability ratings are presented only for those participants who strongly endorsed treatment (i.e. gave a rating of 6 or 7 for acceptability). (See figure 1).
Hypothesis 3. Experience will correlate positively with acceptability of non-aversive behavioural treatment options. This hypothesis was partially supported.

Spearman’s correlations were conducted to test for relationships between Years Experience and acceptability of treatments. A one tailed analysis was carried out to test hypothesis 3 with all behavioural treatments both aversive and non-aversive and Medication. Because Reassurance and Psychotherapy were not included in previous research into treatment acceptability, their analysis was not theory driven, and therefore analysis with these two variables was exploratory. Thus a two tailed level of analysis was used with these options.

Years Experience correlated positively with DRO (rho = .180, N=112, p < 0.05, one tailed) and negatively with Reassurance (rho = -.243, N=112, p < .01, two tailed). Years Experience did not correlate significantly in either direction with any other of the other behavioural treatments.
significantly across the 5 attribution options (chi-squared = 86.363, N=112, df = 4, p<0.001, two tailed).

Wilcoxon Signed Rank Tests revealed that the attribution Personality was significantly less likely to be considered causal for aggression than all other attributions with the exception of Provocation (Z = 1.805, N-ties = 25, p = .071, two tailed). Personality differed significantly from Environment (Z = 6.066, N-ties = 20, p = 0.005, two tailed); from Social Reinforcement (Z = 5.156, N-ties = 23, p = 0.005, two tailed); and from Brain Injury (Z = 1.805, N-ties 19, p = 0.005, two tailed).

Similar to Personality, The attribution Provocation also differed significantly from Brain Injury (Z = 5.446, N-ties 29, p = 0.005, two tailed), Environment (Z = 4.976, N-ties 29, p = 0.005, two tailed), and Social Reinforcement (Z = 3.70, N-ties 34, p = 0.005, two tailed).

Of the remaining attributions, only Brain Injury and Social Reinforcement differed significantly from one another (Z = 2.412, N-ties 38, p = 0.016, two tailed).

**Hypothesis 5.** Clinician participants will be less likely than non-clinician participants to attribute TR’s aggression to the internal Personality attribution. This hypothesis was supported.

In order to determine if non clinicians differed significantly from clinicians in their
attributions for aggression, the two groups' scores were compared (see table 4).

Table 4
Mean and median scores for the two groups (clinicians and non-clinicians) on each of the 5 attributions for aggression.

<table>
<thead>
<tr>
<th>Attribution</th>
<th>clinicians N = 27</th>
<th>non-clinicians N = 86</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>median</td>
<td>mean</td>
</tr>
<tr>
<td>Environment</td>
<td>6</td>
<td>5.85</td>
</tr>
<tr>
<td>Social Reinforcement</td>
<td>6</td>
<td>5.37</td>
</tr>
<tr>
<td>Brain Injury</td>
<td>6</td>
<td>6.00</td>
</tr>
<tr>
<td>Personality</td>
<td>4</td>
<td>4.14</td>
</tr>
<tr>
<td>Provocation</td>
<td>4</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Two-tailed Mann Whitney U tests were conducted between the two groups on each of the attributions with the exception of Personality. Because it was hypothesised that the two groups would differ on the attribution Personality, and the direction of this difference was predicted, a one-tailed Mann Whitney U test was conducted with Personality.

There was a significant difference between clinicians and non-clinicians on two of the five attributions; namely Provocation and Personality. Non-clinicians were significantly more likely to attribute aggression to Provocation than were clinicians (U = 652.500, N1=27, N2=86, p = 0.005, two tailed). Similarly, non-clinicians were significantly more likely to attribute aggression
to Personality than were clinicians (U = 900.500, N1=27, N2=86, p = 0.037, one tailed). The two groups did not differ significantly on any of the remaining three attributions.

The difference between the two groups on strength of attributions is most clearly seen graphically, when attribution ratings are presented only for those participants who strongly endorsed each attribution (i.e. rated each attribution as either a moderately or highly likely cause of TR's aggression) (See figure 2).

**Figure 2**

Percentage of non-clinicians and clinicians that rated attributions as moderately/highly likely

![Bar chart showing attribution ratings for non-clinicians and clinicians.](image)

**Perceived Controllability**

**Hypothesis 6.** Perceived controllability will be positively associated with the internal-personality attribution. This hypothesis was supported.

Because it was predicted there would be a positive relationship between
Perceived Controllability and Personality; a one tailed level of analysis was used for this correlation. Analysis between Perceived Controllability and each of the other attributions was conducted using a two tailed analysis as these correlations were exploratory, and were not hypothesis driven. Spearman correlations are presented in table 5.

**Table 5**

**Correlations between Perceived Controllability and each of the five attributions.**

<table>
<thead>
<tr>
<th>Attributions</th>
<th>Correlation with Perceived Controllability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>.050</td>
</tr>
<tr>
<td>Social Reinforcement</td>
<td>-.146</td>
</tr>
<tr>
<td>Brain Injury</td>
<td>-.121</td>
</tr>
<tr>
<td>Personality</td>
<td>.212*</td>
</tr>
<tr>
<td>Provocation</td>
<td>.048</td>
</tr>
</tbody>
</table>

* p < .05

There was a significant positive correlation between Perceived Controllability and the attribution Personality (rho = 0.212, N=113, p <0.05, one tailed). There was no significant correlation between Perceived Controllability and any of the other four attributions.

**Relationship between attributions and treatment acceptability**

**Hypothesis 7.** The internal-personality attribution will correlate positively with aversive treatment options. This hypothesis was partially supported.
Because the relationship between the attribution Personality and the aversive treatment options was hypothesised and theory driven, a one tailed level of significance was used for these correlations. Correlation analysis between all other attributions and all other treatment options was exploratory, and therefore a two tailed level of significance was used in these cases. See table 6 for all correlations.

**Table 6**

**Correlations between Attributions and Treatment Acceptability**

<table>
<thead>
<tr>
<th></th>
<th>Environment</th>
<th>Social Reinforcement</th>
<th>Brain Injury</th>
<th>Personality</th>
<th>Provocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRO</td>
<td>.127</td>
<td>-.012</td>
<td>.130</td>
<td>-.024</td>
<td>.072</td>
</tr>
<tr>
<td>Seclusion</td>
<td>.015</td>
<td>-.018</td>
<td>-.157</td>
<td>.273**</td>
<td>.006</td>
</tr>
<tr>
<td>Punishment</td>
<td>-.017</td>
<td>.037</td>
<td>.091</td>
<td>.093</td>
<td>.049</td>
</tr>
<tr>
<td>Functional Equivalence</td>
<td>.146</td>
<td>.150</td>
<td>.097</td>
<td>.117</td>
<td>.001</td>
</tr>
<tr>
<td>Establishing Operations</td>
<td>.187</td>
<td>.035</td>
<td>.178</td>
<td>-.120</td>
<td>-.086</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>.149</td>
<td>.231*</td>
<td>.250**</td>
<td>.223*</td>
<td>.248**</td>
</tr>
<tr>
<td>Medication</td>
<td>.117</td>
<td>-.088</td>
<td>.192*</td>
<td>.082</td>
<td>.101</td>
</tr>
<tr>
<td>Reassurance</td>
<td>.061</td>
<td>.134</td>
<td>.100</td>
<td>.247**</td>
<td>.113</td>
</tr>
<tr>
<td>TOOTS</td>
<td>-.023</td>
<td>.187*</td>
<td>.002</td>
<td>.270**</td>
<td>.031</td>
</tr>
</tbody>
</table>

*p < .01; ** p < .001.

There was a significant positive correlation between the attribution Personality and the aversive treatment options Seclusion (rho = .273, N=113, p < 0.01, one tailed), and Time Out On The Spot (rho = .270, N=113, p < 0.01, one tailed). Personality correlated with only two other treatment options, Psychotherapy (rho = .231, N=113, p < 0.05, two tailed) and Reassurance (rho = .247, N=113, p < 0.01, two tailed). It did not correlate with any nonaversive behavioural treatment
option.

The attribution Social Reinforcement correlated positively with Psychotherapy (\( \rho = 0.231, N=113, p < 0.05, \) two tailed), and Time Out On The Spot (\( \rho = 0.187, N=113, p < 0.05, \) two tailed). Brain Injury correlated positively with Psychotherapy (\( \rho = 0.250, N=112, p < 0.01, \) two tailed) and Medication (\( \rho = 0.192, N=112, p < 0.05, \) two tailed). Provocation correlated only with Psychotherapy (\( \rho = 0.248, N=113, p < 0.01, \) two tailed). The attribution Environment did not correlate with any treatment option.

**Comparison between Australian and United Kingdom Participants:**

**Treatment Acceptability:** Mann Whitney U Tests revealed a significant difference in acceptability between Australian and United Kingdom participants on only two treatment options. Both Psychotherapy (\( U = 526.000, N1 = 20, N2 = 93, p = .001, \) two tailed) and Reassurance (\( U = 545.500, N1=20, N2 = 93, p = .01, \) two tailed) were considered significantly less acceptable by non Australian participants than by UK participants.

Australian and United Kingdom participants differed significantly only on the attribution Provocation, with Australian participants rating this attribution as less likely than UK participants (\( U = 513.500, N1=20, N2=93, p = .001, \) two tailed).
DISCUSSION

The major findings of the present study were that, (1) **Treatment acceptability:** in general and in keeping with previous research in the area of learning disabilities and child behaviour management, staff rated non-aversive treatment procedures as most acceptable and aversive procedures as least acceptable, in the management of aggression following traumatic brain injury. **Clinicians and non-clinicians** differed significantly on their acceptability ratings for only two treatment options, Reassurance and Psychotherapy, with non-clinicians considering both these treatment options as significantly more acceptable than clinicians. **Years of experience** did not correlate with any non-aversive behavioural treatment, and correlated negatively only with Re-assurance. (2) **Attributions for aggression:** Participants were more likely to attribute aggression to the brain injury and to external environmental factors, than to an internal personality factor. Over half the participants considered aggression to be at least slightly due to an aggressive Personality, and this attribution correlated significantly with acceptability for two of most restrictive/aversive treatment options. **Clinicians and non-clinicians** differed significantly on two attributions for aggression Provocation and Personality, with non-clinicians being significantly more likely to attribute aggression to both these factors than were clinicians. (3) **Perceived Controllability:** The perceived likelihood of the client being able to control his aggression was correlated with only one attribution; that of premorbid aggressive Personality, and did not correlate with any treatment approach. **Clinicians and non-clinicians** did not differ in their ratings of Perceived Controllability. These findings are discussed in more detail below.
Treatment acceptability

Before discussing treatment acceptability it will be helpful to re-define what is meant by the term ‘aversive’, used here to denote several treatment options. Although in everyday language the term has various connotations it is not used here in a pejorative sense. Rather, it is defined by a treatment approach that is either restrictive or intrusive and/or one that involves either the removal of something wanted or valued, or the introduction of something unwanted. When used in this research the term ‘aversive’ is not meant to reflect staff opinion about the punishing qualities of that intervention, but is used instead by the researcher only to convey the mechanics of that particular treatment approach. Within this definition then the following treatment options are considered ‘aversive’

Seclusion - being escorted to a quiet area, where he must remain until he has calmed down. During this time staff will not interact with him until he is calm

Punishment - after each aggressive outburst TR lose something that he likes, such as a special privilege or a desired activity.

Medication - the administration of a medication used in the management of aggressive outbursts and designed to slow physical responses.

Time Out on the Spot - At the beginning of an aggressive outburst staff walk away from the client and do not re-engage with him until he has been calm for a few minutes.

A flaw in the design of this research is a failure to assess how ‘unpleasant’ or ‘punishing’ participants considered each treatment option to be. It is possible that treatments which would be viewed as ‘aversive’ within the above
definition could still be viewed as either pleasant or unpleasant by staff. Without this information it is not possible to equate 'aversiveness' with participants' beliefs about level of pleasantness/unpleasantness. This area might be addressed by future research also asking participants to rate treatments options in terms of 'pleasantness' at the end of the Treatment Evaluation Questionnaire.

Hypothesis 1 was partially supported with non-aversive treatments being most acceptable, and aversive treatments being least acceptable. Functional equivalence was rated as the most acceptable treatment option, followed by Psychotherapy, Differential Reinforcement of Other Behaviour, Time Out on the Spot, Establishing Operations, Seclusion, Reassurance, Medication and Punishment.

Functional Equivalence and Differential Reinforcement of Other Behaviour were the most highly endorsed non-aversive approaches, and were rated as acceptable by 95.6% of staff and 91.3% of staff respectively. Establishing Operations, the only other non-aversive behavioural procedure was considered acceptable by 76.4% of staff. The fact that establishing operations was considered acceptable by fewer staff may reflect a reluctance on the part of staff to provide a more rewarding environment non-contingently.

Despite the greater endorsement of non-aversive procedures it is noteworthy that aversive procedures were also highly endorsed. Time Out on The Spot was considered slightly acceptable and above by 85.8% of participants. Seclusion was considered slightly acceptable and above by 77.9%, and Punishment by 53.6%. The effectiveness of Time Out on The Spot in the management of aggression has been well demonstrated within the literature (e.g, Manchester, Hodgkinson, and Casy 1997, Wood 1987) and it is similarly encouraging to see its support here. Similarly, whilst not a treatment of choice
in brain injury the use of punishment has been shown to also effect significant
behaviour change, in particular when used in conjunction with other non-
aversive approaches, and when less restrictive procedures have been tried
and have failed (Manchester, Hodgkinson and Casey 1997). Although over
half of the respondents endorsed this option it is re-assuring to note that there
was more caution with this approach with considerably fewer endorsing it than
was the case for Functional Equivalence. The relatively high endorsement for
the use of seclusion was not expected given its highly aversive nature, and
has implications for training in brain injury rehabilitation in terms of reducing
the acceptability of this approach with staff. Researchers in the learning
disability field have been able to reduce the acceptability of punishment
procedures with direct care staff (Berryman, Evans, and Kalbag 1994).

Although the present study was consistent with the literature on treatment
acceptability for aggressive behaviour in learning disabilities and child
psychology, there were some unique differences. A notable exception to the
aversive-non-aversive trend in treatment acceptability was the relatively low
acceptability for the treatment option Reassurance. Reassurance in this study
was rated as less acceptable than two of the aversive procedures; namely
Time Out on The Spot (TOOTS) and Seclusion. One possible explanation
for this is that TOOTS is not considered as aversive by participants. The
TOOTS approach described in this study did not require any physical
intervention on the part of staff, and therefore may not have been viewed as
aversive as the Time Out procedure employed in other studies. In the earlier
studies with children and disruptive behaviour, time out involved removing the
child from the situation. Also, the time period for time out in this study was
relatively brief compared to other studies (Kazdin 1980). Presumably, greater
periods of time would be considered more aversive. It is possible as
suggested by Kazdin (1980) that the varying forms of Time Out differ in their
level of acceptability to staff.
However, even granted that the Time Out procedure here is on face value less aversive than those used in previous research, it is difficult to accept that it was perceived as less aversive by participants than Reassurance. In addition, the possibility that Reassurance is considered more aversive than Seclusion would seem even more remote. Time Out involves the removal of reinforcement for a specified time, whilst Reassurance suggests an attempt to comfort and understand a person. Another explanation for this finding is that more experienced staff may be more likely to have come across behavioural procedures that emphasise the reinforcing qualities of reassurance, and therefore have a greater understanding of the detrimental effect that such a response can have, in terms of strengthening and maintaining the aggressive behaviour. The fact that years of experience correlates only with acceptability of Reassurance as a treatment option, and does so inversely, suggests that this may in fact be the case, i.e. more experienced staff understand that attempting to re-assure someone with a brain injury whilst they are being aggressive is unhelpful. They therefore consider it less acceptable as a treatment option.

The fact that over two thirds of participants endorsed Seclusion as slightly acceptable and above is problematic, and has implications for rehabilitation training. In terms of potency and aversiveness, Seclusion is arguably the most unpleasant and intrusive of all the treatment options in this study, involving as it does physical coercion and isolation. As a treatment option it has little to recommend it. It increases physical contact during emotionally highly charged interactions and therefore increases the risk of physical injury to both parties. It increases the likelihood that staff will take on aversive properties, and will be less effective change agents in future as clients seek to avoid staff members associated with such an unpleasant experience. It provides poor modeling for clients and other staff, in as much as it indicates that this is a reasonable response to aggression. In addition, observing
aggressive acts by others may increase the likelihood of observers exhibiting aggression in similar situations in the future (Baron and Kepner 1970). It is disturbing to witness for both other clients and staff. Finally, it means that the client is away from the learning environment for periods of time when alternative behaviours might be practiced, or modeled by others. Future research can determine how aversive this approach truly is to clients, but clinical experience would suggest it is perceived as demeaning and frightening. It contributes to major difficulties in the therapeutic alliance, and leaves in its wake elevated mistrust, anger, anxiety and depression.

Another unique aspect of this study was the inclusion of psychotherapy as a treatment option. Although psychotherapy is increasingly being advocated in the treatment of persons with learning disability its acceptability as a treatment option with staff working in that area has not been investigated. Thus there is no relevant literature to indicate how acceptable psychotherapy may be to staff in brain injury rehabilitation.

The finding that psychotherapy was the second highest acceptable treatment and was rated as moderately to highly acceptable by over 84% of staff was surprising given the relative paucity of evidence supporting this approach with aggressive behaviour in brain injury. However, it does mirror the perception in the literature that such an approach may be beneficial, with recent writers suggesting how standard psychotherapy approaches may be adapted for this client group (e.g. Manchester and Wood 2001; Judd 1999; Miller 1993; Lewis and Rosenberg 1990). One possible explanation for the popularity of psychotherapy is that the majority of staff have experience with this approach, and have found it to be effective. This is unlikely though, given that psychotherapy in general is a relatively sparse resource, and is particularly so in brain injury. Another possibility is that participants are aware of a body of research pointing to the effectiveness of this approach in brain injury,
however as previously stated no such body exists. A final possibility is that they share a general perception with the rest of the population as to the effectiveness of psychotherapy in (Seligman 1995) and endorse its use in general.

Hypothesis 2 was supported. Non-clinicians and clinicians showed similar trends across the treatments in terms of acceptability. Both groups rated aversive treatments as least acceptable, and non-aversive treatments as most acceptable. This similarity between the two types of staff is in keeping with research findings in the learning disability literature (Miltenberger et al 1989). These two groups did however differ significantly in perceived acceptability on the two treatment options Psychotherapy and Reassurance, with clinicians rating both treatment options as significantly less acceptable than non-clinicians.

It is interesting to note that those who by training (i.e. clinicians) ought to have a greater awareness of the low evidence base for the efficacy of psychotherapy in this client group are significantly less in favour of psychotherapy as a treatment option. Only 37% of clinicians considered this approach as moderately to highly acceptable compared with 93% of non-clinicians. This finding may have important implications for rehabilitation practice. Direct care staff who are often responsible for the day to day implementation of rehabilitation programmes appear to favour a treatment approach that is considered markedly less acceptable by the clinicians responsible for the design of those treatment programmes. If clinicians are not going to recommend or provide such a treatment, it may be important they discuss fully with direct care staff the reasoning behind this decision.

Unfortunately, it is not possible in this study to rule out the effect of treating environment (i.e. hospital versus community) on this result. The majority of
clinicians in this study were based in sub-acute hospital wards. Typically, patients cared for in these environments have sustained relatively recent injuries a significant number of whom will be in a confusional state, with marked attentional and memory problems that effectively preclude any type of prolonged verbal therapy or intercourse. Although the vignette in this study stipulated that the person with aggression was two years post-injury in an attempt to control for this, it is possible that clinicians were influenced in their response, by their own real life experience of aggression, exhibited by disturbed patients in a confusional state shortly after injury. It is perhaps noteworthy that the only other treatment option that the two groups differed on was Reassurance. This may be due again to the acutely disturbed patients responding much less well to verbal interventions because of their confusional state.

Overall, the findings in this study are generally in keeping with those found previously in other areas. There does seem to be a common acceptance of non-aversive treatment procedures in the management of aggression following brain injury. This is an encouraging finding not least because non-aversive treatment procedures may take longer to bring about effective behaviour change than quicker responses that extinguish the behaviour rapidly but at the cost of strengthening the likelihood of aggression in the future. One criticism of the study is that the treatment options were presented to the staff, and in real life may not be self generated. However, this is less problematic than might at first be assumed. Sophisticated behavioural interventions such as differential reinforcement of other behaviour, and functional equivalence training are unlikely to be known by staff without formal training in these techniques. It is more likely that they will be suggested by consulting clinicians. The findings of this research indicate that such suggestions will receive a favourable welcome, and in as much as acceptability increases the likelihood of implementation such treatment is
more likely to be utilised properly.

The fact that seclusion was so highly endorsed is more problematic. Given the adverse consequences of this treatment approach a major implication of this study is that staff can continue to find acceptable this approach whilst simultaneously endorsing more positive approaches. Thus, it may be that for this option to be considered less acceptable simply educating staff about the acceptability of alternative procedures is not enough. The two are considered acceptable simultaneously. Instead, it may be more helpful to look at the reasons underlying the high endorsement of such an aversive procedure. This study has attempted to do this by investigating attributions for aggression amongst staff and their relationship with treatment acceptability. The results of these investigations are discussed now.

Attributions for aggression

Hypothesis 4 was not supported. The internal-Personality attribution was significantly less likely to be endorsed than any other attribution with the exception of Provocation. The internal-Brain Injury attribution was the most highly endorsed attribution for aggression, followed by the external attributions low stimulus Environment, Social Reinforcement, Provocation. Thus, it would appear that when asked to consider possible causes for aggression in clients, most staff working in brain injury rehabilitation give primacy to the brain injury itself, and are able to consider external factors as contributory over and above internal personality based factors.

*Why were situational attributions rated so highly?* A key tenet of Weiner's work is that attributions lead to emotions and emotions guide behaviour (Weiner 1996). Indeed a fundamental aspect of the FAE is that it arouses
anger and therefore increases the likelihood of retaliatory punitive behaviour. As mentioned previously, Gilbert and colleagues (1988) have suggested that the person-perception process involves the three components, categorization of the behaviour (e.g. is it aggressive or not), characterization of the actor (he is an aggressive person) and correction of the characterization (taking situational factors into account (e.g. he was provoked). The first two phases are considered to occur relatively automatically, whilst the third phase that of correction, has been shown to require a more cognitively demanding controlled process. If participants are disrupted in this third phase by being given other tasks that cognitively load on them, their ability to consider the impact of the situation is reduced and they are thus more likely to consider the behaviour to result from dispositional traits and to engage in the fundamental attribution error.

The above two points (i.e. the roles of emotional arousal and cognitive overloading) may explain why participants in this study rated situational factors as being significantly more likely to have contributed to TR's aggression. In the case of emotional arousal, it is unlikely that emotional reactions were induced in participants of a type that would be elicited were the actual aggression being encountered in real life. In other words, merely filling out a questionnaire in the confines of an office or a therapy room that refers to an unknown client's behaviour towards unknown staff members, may not evoke those emotional reactions that being confronted with real aggression would. It is quite possible that in real life situations staff experience anxiety and anger in response to aggressive behaviour and as a consequence of the experience of these emotions are more likely to be supportive of punitive treatment approaches.

Clore and Gerrod Parrott (1991) suggest that in answer to the question of how much blame should be apportioned to a person, a relevant source of
data becomes one's own affective reaction. Thus a staff person might ask themselves “How do I feel as I consider the client I am judging?” They argue that this affective experience plays a more central role in everyday judgement and decision making than has previously been realized. If, as seems likely, an emotional reaction was not triggered whilst filling out the questionnaire, subsequent judgement would be less blaming. Future research might address this issue by asking staff for their attributions for aggressive behaviour after real world incidents, rating them on indices of emotional arousal at the time, and asking them to select a treatment option whilst still emotionally aroused.

Secondly, regarding cognitive overloading, in this study participants were able to give their whole attention to filling out the questionnaire, and to considering the relative contributions of differing possible causes for aggression. This is in contrast to being confronted with actual aggression in the rehabilitation environment, where many alternative demands would compete for cognitive ‘space’, including the appraisal of relative level of threat presented (Lazarus 1999), how best to protect oneself, and others, and how to de-escalate the incident as quickly and as safely as possible. Thus, it would be in keeping with the social psychology literature to assume that staff responding to aggression in the real world will be more cognitively overloaded and therefore less likely to process mitigating information. Therefore, the endorsements of external attributions in this study may be artificially elevated as participants had the cognitive space to process corrective information thereby reducing characterisation effects and internal attributions. Future research might investigate this possibility by asking staff to complete the Treatment Evaluation Questionnaire whilst having to attend to some other cognitively demanding task simultaneously. It would be expected that increased cognitive demand would lead to a much lower endorsement of external attributions as participants would fail to correct for initial, more automatically processed characterizations.
A final alternative explanation for the significantly lower internal attributions made by participants was the effect of mitigating information on subsequent appraisal. It has been proposed that when mitigating information for aggression is provided, less malevolent intent is ascribed to the actor and less anger is aroused (Ferguson and Rule 1983). Johnson and Rule (1986) demonstrated that participants who learned of mitigating circumstance information before being provoked exhibited smaller increases in physiological arousal and also reported less annoyance than those who received such information after being insulted by an actor. In addition, the former group viewed the actor more favourably and retaliated less.

In this study, all participants were aware that the client in the vignette had sustained a brain injury; indeed this was the highest rated attribution for aggression. It is possible that this information served as a mitigating circumstance, and as a consequence participants were less inclined to retaliate by endorsing aversive or punitive procedures. This would especially be the case if TR were not considered to be responsible for the brain injury. Research investigating the reactions of others to persons with illnesses has shown that differing perceptions of responsibility for the illness influence others' reactions to the ill person. Weiner, Perry and Magnusson (1988) found that participants considered people with acquired immunodeficiency syndrome, substance abuse disorders, or obesity to be considerably more responsible for these conditions than persons with Alzheimers, paraplegia, or cancer. Those conditions for which the person was seen as responsible elicited less pity and more anger.

Recently, Weiner (1995) refined the concept of controllability and argued that different reactions are triggered less by the controllability inference and more by judgments of responsibility. Thus, Weiner suggests that mitigating circumstances can change responsibility judgements whilst leaving
controllability inferences unaffected. Forsterling (2001) gives as an example a student who fails his exams because he did not study (a controllable cause), because he was caring for a sick family member (an illness for which he was not responsible). In this example one would be likely to view the cause of failure (not studying) as controllable, but would not hold the student personally responsible for failure, and thus would not experience anger.

Similarly, in this study it may be that whilst a majority of participants considered TR’s aggression to be at least slightly controllable, those who considered it to be triggered more by factors for which he was not responsible (e.g. a low stimulus environment, provocation, the brain injury itself) did not hold him responsible. Conversely, those who considered aggression to be due to an aggressive personality may have perceived his behaviour as controllable and the cause of his aggression (his personality) as his responsibility. These participants therefore endorsed as more acceptable more aversive treatment options. This view is supported in this study by the finding that perceived controllability, whilst highly endorsed, did not correlate with any treatment option, but the attribution Personality did positively correlate with the aversive approaches Seclusion and Time Out on the Spot. The fact that hypothesis 6 was supported and perceived controllability correlated positively with the Personality attribution, lends further support to this suggestion.

Hypothesis 5 was supported. Both clinicians and non-clinicians as a group showed remarkably similar patterns in attributing likely causes for TR’s aggression. This finding is encouraging in as much as it suggests the two groups share a common understanding for the causes of behaviour. The only exceptions to this were for the attributions ‘Provocation’ and ‘Personality’. Clinicians were significantly less likely than non-clinicians to consider Provocation (an external attribution) and Personality (an internal attribution)
as contributing to aggression. Although the difference in Personality attribution is as predicted, it is difficult to account for the difference on Provocation.

The fact that clinicians, by way of greater training, ought to have an increased awareness of the role of environment and provocation on an already compromised individual would have predicted the reverse finding, i.e. clinicians being more likely to attribute aggression to provocation. Again, a possible factor is the effect of treating environment. Clients in grossly confusional states on hospital wards are likely to respond aggressively to less obvious triggers, and are likely to receive less overt provocation in a sedate ward environment than are clients in more community oriented programmes. Again, clinicians may well have been responding on the basis of personal ward based experience with grossly confused and agitated clients.

Finally, the fact that staff were provided with options to choose from, may have prompted them to consider attributions they would not have thought of without being prompted. To rule out this possibility future research would need to ask participants to self generate attributions.

The relationship between attributions and treatment acceptability

The fact that a positive relationship exists between the internal Personality attribution and acceptability for two of the aversive treatments (TOOTS and Seclusion) partially supports the final hypothesis 7; i.e. that the fundamental attribution error (FAE) will correlate with increased acceptability of aversive treatments. From the previous discussion it seems likely that those participants who exhibit the FAE are more likely to consider TR responsible for his aggression, and are more likely to perceive that he can control this if
he really wishes to. Consistent with attribution theory these participants are then more likely to respond punitively.

It is interesting to note that although the Personality attribution did not correlate with acceptability on any of the non-aversive behavioural treatments, none of the attributions did so. On the basis of this finding it would appear that non-aversive behavioural treatments are considered acceptable regardless of attributions, but that the acceptability of aversive treatments is related to the type of attributions made by staff. For the verbal responses Psychotherapy and Reassurance a different picture emerged. Both these approaches correlated positively with the Personality attribution. Whilst Psychotherapy correlated with all Attributions with the exception of Environment, Reassurance correlated only with Personality. Again this finding has implications for staff training as it suggests that staff who display the FAE are more likely to endorse as acceptable not only the most aversive treatment options, but are also more likely to endorse a response that is counterproductive and that reinforces aggression.

This finding has clear implications for staff training. Firstly, training ought to concentrate on decreasing the natural tendency of staff to attribute aggression to an internal personality disposition. Secondly, training ought to concern itself less with trying to decrease staff beliefs about a client's ability to control aggression, and instead concentrate on evaluating the responsibility clients have for the actual causes of that aggression.

**Comparison between Australian and United Kingdom Participants:**

It is noteworthy that the Australian and United Kingdom samples showed very similar results overall. Systematic neurobehavioural rehabilitation approaches
to aggression are far less common in Australia than in the UK. In particular, post acute brain injury rehabilitation is underdeveloped in Australia and team rehabilitation tends to occur at the much earlier stage of hospital based sub-acute rehabilitation. Indeed 80% of the Australian participants were hospital based staff compared with only 14% of the UK sample.

However some differences did emerge between the two countries. Australian participants considered the attribution Provocation to be less likely than UK participants and also viewed the treatment options Psychotherapy and Re-assurance as less acceptable. It is not possible to state that the differences noted between the two samples were entirely due to their being from different countries however. It is quite plausible that the differences were in part due to the fact that the majority of Australian participants were based on sub acute medical wards. Thus, their clients would be far more likely to present with aggression in an acute confusional state. As previously discussed, this group of clients are more likely to be viewed as having internally mediated arousal dyscontrol and to be generally less amenable to verbal interventions due to gross cognitive deficits. It would be instructive for future research to compare a similarly large number of staff working with individuals with brain injury in Australian community settings, with those working in the UK.

This study has concentrated on two variables that may account for treatment choice in brain injury rehabilitation of aggression, namely treatment acceptability, and staff attributions for aggression. However, other variables will clearly play an important role in treatment selection, including the knowledge base of staff, exposure to different treatment approaches, organizational and managerial support for interventions, ease of application, expected speed of therapeutic gain and expected strength of gain
maintenance. Finally, it is hoped that the wishes of clients and their own preferences for treatments will come to play a far larger role in treatment selection, and that research will begin to identify those approaches most acceptable and helpful to clients and their significant others.
References


and Practice. Lisse: Swets and Zeitlinger.


Miller, (1992). Cognitive rehabilitation, cognitive therapy, and cognitive style:
Toward an integrative model of personality and psychotherapy. Journal of Cognitive Rehabilitation, 10, 18-29.


an Experimental Treatment, Lexington, MA: D. C. Heath.


PART A

CLIENT INFORMATION:

TR is a 29 year old man who sustained a brain injury over two years ago. When he is calm he is generally pleasant, interacts well with staff and other clients and seems to like staff attention. His main problem is occasional aggressive outbursts towards other clients and staff when he is angry. His outbursts involve swearing, yelling, threatening, door slamming, and occasionally pushing people. The outbursts are disruptive to his rehabilitation routine. He averages 5 to 8 outbursts a day. Staff are concerned about these outbursts and consider a special programme to be necessary.

Respondent Information

How long approximately have you worked in brain injury rehabilitation

Do you have a health related qualification (not including first aid)?

How old are you?

Today’s date?
From your experience of working with people who are sometimes aggressive

How likely do you think TR's aggressive outbursts are due to:

1. **an unpleasant environment, eg noisy or overcrowded, boring or controlling**

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2. **him doing it to get something that he wants, or to be left alone**

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3. **a physical problem, eg the brain injury or physical pain or illness**

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4. **due to his having had an aggressive personality before the brain injury**

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5. **is due to others provoking him**

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How likely do you think it is that he is able to control his aggression when he wants to

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Imagine that you are a member of TR’s rehabilitation team. At the weekly team meeting the following 9 programme options are discussed as possible treatment approaches. Please read each treatment option and then answer the questions below each one.
Option 1. TR will be rewarded regularly when he engages in appropriate behaviours, and also when he goes for periods of time without aggressive outbursts.

How helpful do you think this approach would be

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very unhelpful unhelpful unhelpful helpful helpful helpful

How willing would you be to carry out this procedure

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very unwilling unwilling unwilling willing willing willing

How acceptable do you think this approach is

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very unacceptable unacceptable unacceptable acceptable acceptable acceptable

Option 2. When an aggressive outburst starts TR is escorted to a quiet area where he must remain until he has calmed down. During this time staff will not interact with him until he is calm.

How helpful do you think this approach would be

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very unhelpful unhelpful unhelpful helpful helpful helpful

How willing would you be to carry out this procedure

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very unwilling unwilling unwilling willing willing willing

How acceptable do you think this approach is

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very unacceptable unacceptable unacceptable acceptable acceptable acceptable
Option 3. After each aggressive outburst TR loses something that he likes, such as a special privilege or a desired activity.

How helpful do you think this approach would be

1 ---------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7
very unhelpful moderately slightly unsure slightly moderately very helpful helpful helpful

How willing would you be to carry out this procedure

1 ---------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7
very unwilling moderately slightly unsure slightly moderately very willing willing willing

How acceptable do you think this approach is

1 ---------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7
very unacceptable moderately slightly unsure slightly moderately very acceptable acceptable acceptable

Option 4. TR is taught alternative behaviours for when he is angry, and is encouraged to use these instead of aggressive outbursts.

How helpful do you think this approach would be

1 ---------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7
very unhelpful moderately slightly unsure slightly moderately very helpful helpful helpful

How willing would you be to carry out this procedure

1 ---------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7
very unwilling moderately slightly unsure slightly moderately very willing willing willing

How acceptable do you think this approach is

1 ---------- 2 -------- 3 -------- 4 -------- 5 -------- 6 -------- 7
very unacceptable moderately slightly unsure slightly moderately very acceptable acceptable acceptable
Option 5. If TR's days are empty and dull he is provided with a safe, stimulating and enjoyable environment regardless of whether he has aggressive outbursts or not.

How helpful do you think this approach would be

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very
unhelpful unhelpful unhelpful helpful helpful helpful

How willing would you be to carry out this procedure

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very
unwilling unwilling unwilling willing willing willing

How acceptable do you think this approach is

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very
unacceptable unacceptable unacceptable acceptable acceptable acceptable

Option 6. TR is provided with regular psychotherapy to talk about his emotional reactions to his injury and to explore how his thinking affects his behaviour and feelings.

How helpful do you think this approach would be

1 - 2 - 3 - 4 - 5 - 6 - 7
very moderately slightly unsure slightly moderately very
unhelpful unhelpful unhelpful helpful helpful helpful

How acceptable do you think this approach is

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very moderately slightly unsure slightly moderately very
unacceptable unacceptable unacceptable acceptable acceptable acceptable
Option 7. The administration of a medication used in the management of aggressive outbursts and designed to slow physical responses.

How helpful do you think this approach would be

1 - 2 - 3 - 4 - 5 - 6 - 7

very moderately slightly unsure slightly moderately very unhelpful unhelpful unhelpful helpful helpful helpful

How willing would you be to carry out this procedure

1 - 2 - 3 - 4 - 5 - 6 - 7

very moderately slightly unsure slightly moderately very unwilling unwilling unwilling willing willing willing

How acceptable do you think this approach is

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very moderately slightly unsure slightly moderately very unacceptable unacceptable unacceptable acceptable acceptable acceptable

Option 8. During an aggressive outburst staff talk to TR and try to reason with him. During this time staff point out to TR that he is behaving inappropriately, and the effect he is having on other people.

How helpful do you think this approach would be

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very moderately slightly unsure slightly moderately very unhelpful unhelpful unhelpful helpful helpful helpful

How willing would you be to carry out this procedure

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How acceptable do you think this approach is

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very moderately slightly unsure slightly moderately very unacceptable unacceptable unacceptable acceptable acceptable acceptable
Option 9. At the beginning of an aggressive outburst staff walk away from TR (if safe to do so) and do not re-engage with him until he has become calm again for a few minutes.

How helpful do you think this approach would be

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