ATTENTIONAL DEFICITS FOLLOWING SEVERE CLOSED HEAD INJURY AND IN CHRONIC PAIN: A COMPARATIVE STUDY.

Submitted by

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I certify that all material in this thesis which is not my own work has been identified and that no material is included for which a degree has previously been conferred upon me.

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ACADEMIC CHAPTER
ESSAY 1: ADULT MENTAL HEALTH

WHAT ARE THE THEORETICAL AND PRACTICAL LIMITATIONS OF THE COGNITIVE MODEL OF ANXIETY?
What are the theoretical and practical limitations of the cognitive model of anxiety?

In answering the above question, this essay adopts the following structure. As a point of departure the historical factors leading to the development of the cognitive model are briefly reviewed and the important psychological constructs upon which the model relies are outlined. These two areas provide a backdrop against which the theory and practise of cognitive approaches to anxiety related disorders are described. Practical and theoretical limitations of the cognitive model of anxiety are then discussed with reference to critical research studies.

Historical factors in the development of cognitive models.

By 1970s psychological therapies had developed rapidly and behavioural theory and therapy had been widely accepted for many years. As research and therapy developed further proposals merged that psychological problems could be conceptualised in terms of three different response systems: the behavioural, the cognitive and the physiological.

This tripartite approach offered a systematic explanation for the varied symptoms which clients presented with. Moreover it enabled the efficacy of certain interventions to be delineated, for example relaxation was regarded as being appropriate in treating the physiological symptoms. In the same way the tripartite approach provided an impetus in the development of cognitive theories for psychological problems. Many theorists and clinicians began working with cognitions (e.g. Bandura’s self efficacy work, Meichenbaum’s work on self instructional training, Ellis’ Rational Emotive Therapy), however during the time of this cognitive revolution within psychology, it was Beck’s cognitive theory and therapy which became most widely known.
Beck devised his theory and therapy with regard to depression (Beck et al, 1979) an area in which traditional behavioural therapeutic approaches appeared to have achieved little success. The introduction of cognitive therapy appeared to bring this therapeutic success. A review of 28 outcome studies suggests that cognitive therapy is as effective as other treatments of depression (Dobson, 1989). Evidence also suggests that cognitive therapy is superior in preventing relapse than pharmacotherapy (Shea et al, 1992).

Underlying constructs of cognitive theory and therapy.

There are various psychological constructs which may be regarded as underpinning Beck’s cognitive theory of psychological problems. Before turning to the theoretical and practical aspects of the model it is useful to briefly outline these constructs.

i) Information processing model of psychological function.
This is the view that humans constantly perceive and interpret cues from the environment to guide appropriate actions and behaviour. In order for information processing to be efficient, cognitive processing is organised hierarchically thus permitting information to be selectively attended to according to requirements.

ii) Organisation of cognitions.
Cognitions are viewed as being hierarchically organised into three levels according to accessibility and stability.

Voluntary thoughts - These are most accessible and occur within consciousness.

Automatic thoughts - These are less accessible and seem to arise without awareness. They are therefore relatively stable and may be difficult to inhibit or modify.

Underlying beliefs or schemas - This is Beck’s deepest level of cognition and is regarded as representing the guiding principles through which the individual views the world, self and others. Schemas are established through learning experiences often early in life. Although an individual’s underlying schema are highly personalised, common themes within schema and cognitive interpretations relating to a psychological
disorder are often identifiable. In anxiety disorders, central schematic themes relate to danger or threat and common cognitive interpretations involve overestimating the probability and or the severity of the feared event, and underestimating coping strategies (Clark & Beck, 1988). According to the information processing models, danger and threat schema remain dormant until activated by relevant life events.

**iii) Continuity hypothesis of emotional responses.**

This suggests that emotional responses lie along a continuum from normal, rational reactions to excessive irrational reactions evident in psychological disorders.

**Outline of cognitive theory.**

Drawing on the above constructs, the theoretical cognitive model suggests that in the instance of psychopathology, schema are activated by a relevant life event. The information processing system becomes biased by cognitive distortions which give rise to a proliferation of automatic thoughts (usually negative). These automatic thoughts serve to maintain and reinforce the underlying schema. Negative interpretations of events elicits the excessive emotional responses characteristic of a psychological disorder. Thus one of the central tenets of cognitive theory is that it is not the events per se which give rise to emotional distress, but the individual’s interpretation of these events. Relating this more specifically to the occurrence of anxiety, the following is noted.

Anxiety may be regarded as the fight or flight response which is evolutionarily adaptive. However, in anxiety disorders, the fight or flight response is initiated in the absence of objective danger. The cognitive model suggests that an individual’s underlying schema (often relating to danger or threat) is activated by a cue. Biased information processing results in this cue being interpreted as threatening (negative automatic thoughts) which results in the production of anxiety. It is suggested that there are two biasing factors at work within the information processing system. Firstly, it appears that individuals selectively attend to "threatening" stimuli (Burgess et al,
Within the clinical setting this illustrated by clients who report “body scanning” for symptoms of anxiety. Secondly, cognitive distortions or biases cause innocuous or ambiguous events to be interpreted as threatening (McNally & Foa, 1987). Both these cognitive factors serve to perpetuate the experience of anxiety per se and the anxiety disorder, through reinforcing the underlying schema. Significantly in anxiety disorders, cues which are interpreted as threatening are not only external events. The physiological sensations of anxiety are often interpreted as dangerous. For example a raised heart rate may be interpreted as signifying an impending heart attack; quickened breathing as impending suffocation. A self perpetuating vicious cycle is quickly established as individuals misinterpret mild bodily sensations as threatening thereby increasing anxiety and the occurrence of the physiological sensations of anxiety.

Outline of cognitive therapy.

Turning to the practical derivation of the cognitive model of anxiety, the six basic clinical procedures characteristic of Beck et al’s (1979) cognitive therapy are outlined.

i) Preparing the client and providing cognitive rationale.
This stage involves educating the individual about the cognitive model of anxiety using information from the individual’s life in order to illustrate the relevance of the model to their problems. Presenting the rationale serves to make therapy accessible to the individual and helps to encourage a collaborative therapeutic relationship.

ii) Training in self monitoring of thoughts.
This involves training the individual to attend to their automatic thoughts. Without such training, automatic thoughts would remain outside of the individual’s awareness.

iii) Application of behavioural techniques.
These may include behavioural experiments to access automatic thoughts, specific techniques to control physiological responses (relaxation, diaphragmatic breathing),
goal-directed exposure in order to address avoidant behaviour and to provide data which contradicts negative beliefs and cognitions.

iv) Identifying and challenging negative cognitions.
This is the main focus of cognitive therapy, since the cognitive model of anxiety expounds that it is the negative or biased interpretation of events which leads to anxiety. Many techniques are suggested which are designed to help identify negative cognitions including socratic questioning, downward arrow questioning, imagery techniques, behavioural testing, written record of thoughts. Once negative cognitions have been identified, the individual and the therapist are able to assess the effect these cognitions have on eliciting or maintaining anxiety by referring to the model shared in the first stage. If the cognitions are proven to be maladaptive, the individual is required to challenge them and provide more rational or appropriate alternatives. This is achieved through the therapist prompting and questioning.

v) Examining beliefs and underlying assumptions.
As well as identifying and challenging specific thoughts which are found to be maladaptive, cognitive therapy aims to identify and challenge the underlying beliefs which give rise to specific thoughts. Again this is achieved through the individual reviewing the evidence for a belief and generating alternatives to those initially held. A underlying beliefs are at the schema level of cognitive organisation, it is often necessary to move away from the “here and now” and involve historical review in order to establish evidence for and against long-standing beliefs.

vi) Termination and relapse prevention.
This stage is introduced early into therapy. Part of the rationale shared in stage i) would be the notion that cognitive therapy will equip the individual with skills which they will be able to implement independently on future occasions.

Having outlined the theory behind the cognitive models of anxiety and the clinical procedures involved in cognitive therapy, criticisms and limitations of the theory and practise will now be discussed.
Practical Limitations.

i) Dependency upon "psychological mindedness" of clients.
This criticism is not exclusive to cognitive therapy and could be considered relevant to any collaborative psychological intervention, however it is particularly pertinent to cognitive therapy. In Cognitive Therapy and Emotional Disorders (1976) Beck writes "..Cognitive techniques are most appropriate for people who have the capacity for introspection and for reflecting about their own thoughts and fantasies." (p.216). It is argued that cognitive therapy may only be accessible to clients who are able to accomplish the psychological tasks involved most notably identifying and challenging cognitions. Two key factors which may inhibit accomplishment of the required psychological tasks are state dependent memory and cognitive avoidance.

State dependent memory describes the inability to recall anxiety related cognitions unless in a state of anxiety. In order to circumvent this problem, cognitive therapy advocates the use of behavioural experiments to elicit anxiety thereby making negative thoughts accessible. If behavioural experiments are persistently used it becomes difficult to argue that cognitive approaches offer anything more than the behavioural exposure paradigm. It also becomes difficult to prove that improvements are the result of cognitive interventions an not the result of the exposure experienced in attempts to elicit negative cognitions.

Cognitive avoidance it the prevention of detailed processing of a distressing thought or image. There appear to be many forms of cognitive avoidance some involving intentional distraction strategies such as whistling (Beck et al, 1985) and some which appear to be beyond the realm of an individual’s control. In the same way that negative thoughts are regarded as automatic, it may be possible that cognitive avoidance is also an automatic process operating beyond a person’s immediate control and awareness. In order to overcome cognitive avoidance, proponents of cognitive therapy merely suggest gently persisting in questioning until negative thoughts are elicited. However, this may be criticised as too simplistic. It is unlikely that an individual will readily
abandon what has become an automatic, adaptive strategy to limit distress. Individuals who engage in cognitive avoidance may find it impossible to identify cognitions thus making cognitive therapy of limited use.

**ii) Cognitive therapy is short term, is aimed at symptom reduction and is too present-centred.**

These three criticisms are inextricably linked. They are primarily levelled by therapists who adopt a more long term psychodynamic approach. The psychodynamic school of thought suggests that these factors identify cognitive therapy as a superficial approach which is unable to achieve the depth of understanding of psychopathology required to effect long-standing change.

In response to these criticisms, cognitive therapists argue that outcome studies have proven the long term efficacy of the approach. For example with regard to the treatment of social anxiety evidence suggests that the most important variable mediating improvement is reduction in the fear of negative evaluation. Mattick et al (1989) demonstrated that manipulating this cognitive variable lead to a decrease in the experience of anxiety. However, the application of these research results may be questioned due to limited subject selection. Research prior to 1989 in the field of social anxiety tended to use DSM III criteria to select subjects. According to these criteria, individuals with avoidant personality disorder could not be given a concomitant diagnosis of social anxiety. This implies that studies of social anxiety prior to 1989 are likely to have excluded the most severe cases.

**Theoretical Limitations.**

Many of the criticisms suggesting theoretical limitations of the cognitive model of anxiety are levelled by proponents of behaviourism. This is not surprising given that the area of anxiety was long regarded as the bastion of behaviourism before the introduction of cognitive models. Generally there have been two viewpoints held by behaviourists with regard to cognitive theory. On the one hand a polemic stance was
adopted with behaviourists angered that cognitive theory did not separate itself completely from behaviourism but merely changed the emphasis creating a cognitive-behavioural approach. In America this created much political unrest with some behaviourists withdrawing from the Association for Advancement of Behaviour Therapy rather than maintain links with an organisation which also represented cognitive therapists.

On the otherhand there were those behaviourists who did not believe cognitive approaches offered anything over and above behavioural approaches and that therefore the two approaches should not be distinct from one another. Following from this view, critical research studies suggest that more specific theoretical limitations of the cognitive model of anxiety can be proposed.

i) Decline in negative cognitions may be the consequence of reduced anxiety rather than the cause.
Results from comparative outcome studies of individuals with anxiety disorders suggest that the same degree of improvement is observed in groups who received pure exposure therapy and groups who received pure cognitive therapy (Margraf & Schneider, 1991; Booth & Rachman, 1992). Moreover, negative cognitions declined to the same extent in both groups. This has two implications: firstly that a reduction in negative cognitions could be the consequence of reduced anxiety rather than the cause. Secondly, it provides evidence for a reduction in cognitions without using direct cognitive interventions. Both of these suggestions are counter to the cognitive model.

ii) Indirect treatment produces a reduction in negative cognitions.
As seen above, a reduction in negative cognitions has been observed in the absence of direct cognitive intervention. In addition, drug therapy alone has also effected a reduction in negative cognitions (Clark et al, 1992; cited in Rachman, 1991). It is likely that these indirect interventions have provide the opportunity for the individual to acquire evidence which is contrary to their negative cognitions, thereby weakening them. However, if the cognitive model is accurate in its conceptualisation of anxiety it
would be more effective in achieving a reduction than indirect interventions. This is not supported by the above research studies.

**iii) Anxiety can occur without negative cognitions.**
Rachman (1991) refers to the occurrence of “non-cognitive” panics and cites a study in which patients reported episodes of panic occurring with an absence of negative cognitions (Rachman et al, 1987). The cognitive model would suggest that negative cognitions were active in the occurrence of panic but due to their automatic nature were outside the individual’s immediate awareness. However, the authors claim that this does not provide a satisfactory explanation as all of those individuals who described “non-cognitive” panics had also described “cognitive” panics. Therefore this phenomenon could not be due merely to subject error. This observation implies that the cognitive model is unable to account for all occurrences of panic or anxiety.

**iv) The cognitive model does not offer a clear explanation of how cognitive interventions actually effect change.**
Cognitive therapy is derived from the theoretical model of anxiety. However the theoretical model does not provide an explanation of precisely how therapeutic interventions effect change. This is illustrated by the difficulty in charting cognitive changes. Firstly, cognitive changes appear to happen gradually over a period of many weeks, yet in some cases may occur quite suddenly. Secondly, anxiety reduction (as measured by fear per se and by fearful cognitions) appears to happen when the individual is away from the fear provoking stimulus, i.e. between sessions (Rachman, 1980; Rachman & Booth, 1992). This suggests that the cognitive input during a session initiates a process which continues between sessions and concludes after an interval in which the individual has no contact with the anxiety provoking stimulus or situation (Rachman, 1993). The cognitive model does not presently accommodate either of these two phenomena and is not able to predict how nor when cognitive changes occur.

Following the success of the use of cognitive models with depression, Beck and his colleagues developed the remit of cognitive theory and the application of cognitive
therapy to other emotional disorders (Beck et al, 1985). There are currently many
guides expounding the benefits of the cognitive model to conceptualise and treat a
wide variety of anxiety related disorders. The introduction of the cognitive model has
expanded on behaviourism and provides a conceptualisation and treatment approach
which integrates the cognitive, behavioural and physiological components of anxiety.

Outcome studies to date provide some evidence for the efficacy of this approach
(Butler et al, 1991), however, research is equivocal. Some of the practical and
theoretical limitations of the cognitive model of anxiety are outlined above. Possibly
the most notable of these is the limitation of the cognitive model to explain the
observed therapeutic successes. Rachman (1991) points out that if the theoretical
model is confirmed through further research then it should be possible to develop
current treatment methods and to extend their use to all anxiety related disorders. If,
however, the cognitive model is disconfirmed, Rachman concludes “..we will be left
with a collection of embarrassingly successful therapy results which evade explanation”
(Rachman, 1991; p.287).
References.


ESSAY 2: LEARNING DISABILITIES

DISCUSS THE USE OF A GENTLE TEACHING APPROACH WITH PEOPLE WITH LEARNING DISABILITIES WHO SHOW CHALLENGING BEHAVIOURS.

ARE ANY OF THE TECHNIQUES USED IN GENTLE TEACHING COMMON TO THOSE USED IN APPLIED BEHAVIOUR ANALYSIS?
Discuss the use of a gentle teaching approach with people with learning disabilities who show challenging behaviours. Are any of the techniques used in gentle teaching common to those used in applied behaviour analysis?

Gentle teaching has risen to prominence through the aversive - non-aversive debate regarding treatment approaches for challenging behaviour in individuals with learning disabilities. Proponents of gentle teaching state that the guiding beliefs of this approach are grounded in strident condemnation of applied behaviour analysis and as a result, gentle teaching has come to be regarded as the definitive non-aversive approach (Jones & McCaughey, 1992). Significant controversy has developed around this approach, particularly with regard to the relationship between the polarised stand points of gentle teaching and applied behaviour analysis.

Commentators have acknowledged that the debate has at times become vitriolic and personal in nature which has interfered with discussion of the relevant issues. It is to this task that this essay turns. Firstly, the concept of gentle teaching is presented. The benefits and attractions of gentle teaching as a therapeutic approach are outlined and the literature in support of it reviewed. Criticisms of gentle teaching and of its research literature are discussed. The essay then addresses the relationship between gentle teaching and applied behaviour analysis.

Assumptions and objectives of gentle teaching.

A point of departure in understanding the gentle teaching approach must be its underlying assumptions. The three key assumptions are outlined below along with the resultant key objectives or requirements of gentle teaching.

i) The first assumption concerns the nature of the relationships experienced by learning disabled individuals with challenging behaviour. It is taken that human relationships
which are meaningful and important to both parties are based upon affections, trust and respect. Due to their devalued status it is assumed that individuals with challenging behaviour do not have the opportunity or the ability to foster such relationships or respond to others in an affectionate way. "Bonding either has never existed or has been diminished for any number of personal, social or psychological reasons. “ (McGee et al, 1987; p.18).

Hence one of the key objectives in gentle teaching is to achieve bonding (later referred to as interdependence) between the individual and the caregiver. In order to achieve this the caregiver must demonstrate that human interactions and relationships can be rewarding. In the first instance the development of bonding is therefore dependent upon the attitude and behaviour of the caregiver, however due to the reciprocal nature of meaningful relationships, bonding is not regarded as having been achieved until the individual begins to reciprocate valuing and affection.

ii) The second assumption addresses challenging behaviour. It is assumed that all challenging behaviours are the individual’s way of communicating distress, discomfort or anger. “The emergence of disruptive or destructive behaviours is often the person’s way of communicating with an incomprehensible and non-responsive world”. (McGee et al, 1987; p.18). As individuals with learning disability often have difficulties in communication (due to sensory, neurological, psychological, physical and social factors) it is also assumed that they are more likely than other groups to develop challenging behaviours.

Gentle teaching therefore requires that other avenues of communication are made available to the individual so as to make the use of challenging behaviours unnecessary. It is intended that this will be achieved through the bonding process and within the context of a valuing, reciprocal relationship between caregiver and individual. Additionally it is understood that once bonding is achieved an individual’s experience of the world is no longer “incomprehensible and non-responsive”. Therefore their experience of distress, discomfort and anger is greatly reduced as is their need to communicate this though challenging behaviour.
iii) Thirdly, it is assumed that individuals with learning disability are a devalued group. Within society, people are valued according to their relative achievements and abilities. Compared to other groups people with learning disabilities have fewer relative abilities and are therefore devalued.

Gentle teaching adopts the view that individuals with learning disability do not need to prove their value; it is inherent in being human. Gentle teaching requires that individuals receive unconditional valuing; “..it is held that every person’s value is intrinsic, simply because she or he is a unique human being.. This value must be felt inspite of the person’s maladaptive behaviours..” (McGee et al, 1987; p.157).

The above assumptions and resultant key objectives or requirement provide a philosophical framework for gentle teaching within which intervention is to occur.

**Intervention techniques of gentle teaching.**

In their keynote book “Gentle Teaching” McGee et al (1987) describe techniques which are to be employed to reduce challenging behaviours. These techniques include errorless teaching strategies, task analysis, environmental management, precise and conservative prompting, the identification of precursors to target behaviours, the reduction of verbal instructions or verbal and physical demands, choice making, fading assistance, the integration of other caregivers and peers into the relationship. It is made clear that the techniques must be employed from the philosophical stance outlined above. If this is not the case, then it is claimed that the techniques become meaningless.

There are no prescribed methods by which to implement the techniques, in fact it is claimed that applying the techniques in a rigid menu-like fashion would be too restrictive to meet the diverse needs of the client group (McGee et al, 1987). Rather, people using the gentle teaching approach are advised to base their intervention upon their judgement of which technique or combination of techniques would be most
appropriate in order to work with the moment to moment changes in the individual’s behaviour. Accordingly, it is claimed this permits intervention to be flexible and responsive to the changing needs of the client. Supporters of gentle teaching claim that it is the innovative, flexible implementation of a mixture of these techniques which affords the opportunity to develop bonding and avoid punishment.

Marrying the underlying assumptions with proposed intervention strategies provides the following summary of gentle teaching.

Due to his or her devalued status within society, an individual with learning disability has not had the opportunity to foster meaningful relationships with others based on reciprocal trust, affection and respect. This may lead to the individual experiencing the world as being unresponsive and incomprehensible. As a result the individual may express his or her anger and distress through disruptive and destructive behaviours.

Through establishing positive, reciprocal relationships with carers, gentle teaching aims to provide the opportunity for the individual to experience the world as meaningful and responsive, thereby reducing their anger and distress and ultimately the behavioural manifestation of these feelings.

In order to effect this, gentle teaching requires the carer to value the individual unconditionally, to be sensitive to his or her needs and to respond accordingly. Intervention techniques are suggested to the carer, although the expectation is that the carer will be flexible in approach and will use the techniques innovatively in order to promote bonding and a meaningful, reciprocal relationship.

The approach has been described as a “...nonaversive method of reducing challenging behaviour that aims to teach bonding and interdependence through gentleness, respect and solidarity... (with)... Emphasis placed on the importance of unconditional valuing in the caregiving and therapeutic process.” (Jones & McCaughey, 1992; p.853).
It appears then that gentle teaching conceptualises challenging behaviour as arising from an individual’s experience of unpleasant, unfulfilling relationships both with others and with their environment. This conceptualisation may be beneficial as it avoids internalising an individual’s difficulties. Internalising difficulties may lead staff to believe that the individual is at fault or is beyond help. This may inadvertently lead to an abusive caring environment. Intervention is based around the carer-individual relationship. Emphasis is placed on mutual change; firstly, the carer is responsible for altering their posture towards the individual, increasing value-centred interactions and decreasing dominative interactions, thus creating the opportunity and environment for a change in challenging behaviour.

Inevitably there are opposing views and gentle teaching can be decisively criticised as an intervention technique.

**Criticisms of gentle teaching as an intervention approach.**

Firstly, there is no clear procedural definition of gentle teaching. No guidance is offered on how to actually achieve the overall goal of teaching “bonding and interdependence through gentleness, respect and solidarity”. The intervention techniques are not operationally defined thus it is unclear as to how or when to use them. There is no guidance on how to set smaller, personalised intervention goals, nor how to incorporate the ill-defined techniques into an intervention programme. Rather, an enquirer is encouraged to use their own judgement in applying techniques according to what they believe to be most appropriate at the time. This raises an interesting ethical point. Through whatever means, gentle teaching still has modification of challenging behaviour as its end. It could be argued that trying to offer a less rigid and controlling environment merely leads gentle teaching to generate an environment in which purely subjective judgements are accepted as reason enough to implement a particular strategy. As a result, those adopting this approach are less accountable for the interventions they impose. Having ill-defined operational procedures or guidelines
means that it is difficult to evaluate the effects of the approach and it is also difficult for people to learn how to become gentle teachers.

Secondly, during its evolution gentle teaching appears to have undergone more than the expected and necessary modifications of a psychological theory. Indeed there appear to be a number of identifiable changes in direction as previous work and emphases are ignored in later writings and formulations. For example, McGee’s series of papers written in 1985 which first introduced the term gentle teaching are not mentioned in the 1987 book by McGee et al (Jones & McCaughey, 1992). Further discrepancies in the evolution of gentle teaching can be outlined. Early expositions of the approach recommend that caregivers do not interact with, nor attend to individuals who are engaging in challenging behaviour (McGee et al, 1987). This is in direct contrast to the later suggestion by McGee (1990) that it is imperative to provide positive signals to the individual such as smiles, pats on the back, eye contact. McGee emphasises the unconditional nature of this positive regard stating “These signals are given unconditionally and are not related to any current behaviours whether adaptive or maladaptive.” (McGee, 1990; p.68).

Thirdly, some commentators have gone as far as to suggest that gentle teaching may in fact be aversive. The underlying assumption that all challenging behaviour is a method of communicating anger, distress or discomfort precludes the need for a detailed functional analysis of behaviour within the gentle teaching framework. Whilst this assumption may be widely accurate it is often possible to devolve the further through detailed functional analysis in order to establish with some degree of certainty, what is causing the individual’s distress. As gentle teaching does not recognise any need to investigate more specific functions of behaviour, it has been suggested that for people whose challenging behaviour serves the purpose of enabling them to escape from contact with others, gentle teaching would be an aversive experience (Emerson, 1990).

Following this line of argument, Jones and McCaughey (1992) suggest that McGee himself may be seen as supporting the notion that gentle teaching is aversive as he writes that at the beginning of the intervention process, the individual will display
behaviours such as kicking, biting, screaming which may be understood as their desire to avoid contact with the caregiver. McGee suggests that these behaviours be ignored and the process of gentle teaching continued regardless (McGee, 1985, in Jones & McCaughey, 1992). Jones and McCaughey suggest that adopting this stance is "...indistinguishable from the 'end justifies the means' rationale that McGee claims is used by mainstream behaviourists to justify the use of aversive procedures".

**Research findings supportive of gentle teaching.**

The use of gentle teaching in the field of challenging behaviour has been reported as being successful with many hundreds of individuals. Mudford (1995) reports that McGee has claimed during presentation of a conference paper, that gentle teaching has never failed.

Data from 73 individuals treated for self-injurious behaviour is presented in McGee et al (1987). This data indicates spectacular improvements in both the rate of occurrence and the severity of the behaviours displayed following the adoption of gentle teaching with these individuals. Mudford (1995) cites more recent experimental work carried out by supporters of the gentle teaching approach. McGee and Gonzalez (1990) reported data from 15 individuals treated for self-injurious behaviour and aggression, indicating reductions of 76% and 86% respectively in these behaviours. Mudford cites an undated manuscript distributed by McGee, reporting average reductions of 78% and 90% respectively in self-injurious and aggressive behaviours in 40 individuals. A single-subject case study of a 9 year old boy also indicates near elimination of severe self-injury and aggression after only 11 days of gentle teaching (McGee & Menolascino, 1992).

These reports and data appear extremely impressive. However it has been pointed out that much of this supporting work has not been published in the standard peer-reviewed journals in the field. Therefore critical review of these claims and research findings has been difficult to achieve (Bailey, 1992). More recent critical reviews of
gentle teaching's supportive research findings have opened the discussion on this approach. It is to these criticisms that this essay now turns.

**Critique of the gentle teaching research.**

Mudford (1995) provides the clearest exposition of the drawbacks in the research which claim to support efficacy of gentle teaching. He points out that early claims for the efficacy of gentle teaching provided no methodological information, no demographic information (level of learning disability, presenting behaviours, method of selection for the study) and no information relating to possible confounding variables such as medication. Therefore claims of gentle teaching being effective with 540 consecutive cases can not be evaluated effectively by others.

The later studies claiming evidence of efficacy are also criticised by Mudford (1995). He highlights various inconsistencies in the reporting of data, incomprehensible statistics and methodological flaws in study design.

**i) Inconsistencies in reporting data.**

On comparing the subjects involved in McGee's undated study of 40 individuals and the McGee and Gonzalez (1990) study involving 15 individuals, Mudford found that the first 15 reported subjects for the cohort of 40 in McGee's unpublished paper have near identical personal data (age, degree of learning disability) to the 15 subjects in the 1990 paper. Given the incredibly low probability of two groups having near identical personal data, it appears highly likely that they are in fact the same subjects. Yet there is no mention in either paper of any of these 15 subjects having been involved in a previous study of gentle teaching. In addition there are discrepancies in the reporting of whether some of these individuals were receiving psychotropic medication during the period of gentle teaching intervention. These two factors would clearly affect interpretation of results.
Mudford (1995) claims another example of discrepancy in reporting data is evident in the McGee and Gonzalez (1990) paper. The paper states that there was an average of 4.8 observation sessions during the baseline period. However, only 3 baseline data points are presented for each individual. Also, the paper states that at least 7 treatment sessions were observed for each individual. However, for 4 of the 15 participants, data for 6 or fewer treatment sessions are presented. It is concluded "...that either data was selectively excluded or misreporting has occurred", (Mudford, 1995; p.349).

**ii) Incomprehensible statistics.**
Statistics reported in McGee and Gonzalez (1990) have been criticized as impossible. Mudford points out that pre and post intervention data for one variable suggests an increase of 3,603% whereas components of this variable were individually reported in the paper as increasing by 100% or less. Therefore an overall increase of 3,603% is not possible.

**iii) Methodological flaws in study design.**
Difficulties with study design and methodology are also highlighted by Mudford with regard to the McGee and Gonzalez (1990) paper and the McGee and Menolascino (1992) paper. In particular he queries the validity of collecting data on behaviours which are not behaviourally defined. For example:

*Value giving* - caregiver behaviours which "appear to express sincere friendship, warmth, acceptance and the desire to share''.

*Assisting warmly* - "the caregiver appears to express this helping relationship in a spirit of friendship and equality and thereby diminishes any perception of an emotional or physical tug of war''.

Collecting data on these behaviours requires the observers to make subjective judgements and to infer the intentions of the caregiver. Given the large subjective component in recording behaviour, one has to be sceptical about the high levels of inter-rater reliability which are reported (ranges of 83%-98% and 80%-95%) in each of the above mentioned gentle teaching papers. Moreover, independent replication of these levels of inter-rater reliability are even less likely which is clear methodological drawback.
The above criticisms cast doubt on the validity of the research which claims support for the efficacy of gentle teaching. Attempts at independent replication of these findings have also shown uneven success and have most certainly not supported the claims that gentle teaching has never failed in the treatment of challenging behaviour. Early attempts at replication were themselves criticised for methodological shortcomings. For example, the alternating treatment design used by Jordan et al (1989) when comparing gentle teaching with visual screening intervention to manage challenging behaviour can be criticised as inappropriate as it would preclude the development of a close relationship between caregiver and individual; the keystone of gentle teaching.

Later replication attempts have found gentle teaching to be effective with some individuals but to have no effect with others. Proponents of gentle teaching have claimed that the lack of success can be accounted for by errors in the application of the gentle teaching approach. This proves to be an erroneous claim. Two points are made. Firstly, as already stated, there are no operational procedures regarding application of the gentle teaching approach. Therefore proponents are not justified in claiming that the procedures were not applied properly. Secondly, Barrera and Teodoro (1990) involved McGee on a consultancy basis to guide intervention. McGee’s involvement could be seen as ensuring the gentle teaching procedures were applied properly. Nonetheless, results indicated that the individual’s self-injurious behaviour increased to levels in excess of baseline levels following implementation of gentle teaching.

The relationship between gentle teaching and applied behaviour analysis.

Gentle teaching was originally presented as an alternative to the aversive techniques used in behaviour modification. Since then the debate provoked by the two approaches has become vitriolic and the two approaches have become polarised. However, polemic stances may not be a true representation of the relationship between gentle teaching and applied behaviour analysis. Similarities can be drawn between the two approaches
at three levels; the level of practical intervention techniques, the level of underlying assumptions and the level of fundamental philosophy.

i) **Similarities between intervention techniques.**

The first and clearest overlap between the two approaches is the cluster of specific techniques described in gentle teaching. Proponents of gentle teaching have acknowledged that these techniques are not new nor exclusive to their approach. Many are recognisable as long-standing behavioural procedures. In a recent response to a critical review of gentle teaching, McGee (1992) states that he and his colleagues whilst developing gentle teaching recognised the contribution of past behavioural research and "...recommended the use of a number of supportive techniques in the gentle teaching package." (McGee, 1992; p.869). These include some techniques which appear to be behavioural in origin, for example, environmental management, the identification of precursors to target behaviours, fading assistance and task analysis.

By name many of these techniques are recognised as those used in applied behaviour analysis and are defined and explained in many well established texts on the subject (Yule & Carr, 1987; LaVigna & Donnellan, 1986). However, as gentle teaching does not offer any operational definitions nor guidelines of any techniques it is not clear as to whether these stated techniques are intended to be the same within the context of gentle teaching as the context of applied behaviour analysis. In the absence of any alternative operational definitions it can be assumed that gentle teaching is in fact adopting those techniques characteristic of applied behaviour analysis.

ii) **Similarities between underlying assumptions.**

The second level of overlap concerns the underlying assumptions outlined by gentle teaching. Bailey (1992) suggests that these underlying assumptions and key objectives are also not new nor exclusive to gentle teaching. He suggests that "bonding" through establishment of a close, reciprocal relationship between caregiver and individual is a label which describes a by-product of staff using positive reinforcement as part of a behavioural intervention. He goes on the argue that the other underlying assumptions of gentle teaching (outlined above) are widely accepted by other theorists including
behaviour analysts. Therefore these assumptions do not differentiate gentle teaching from applied behavioural analysis.

**iii) Similarities between philosophies.**

The third similarity between the two approaches is at the philosophical levels. Gentle teaching was initially presented as a non-aversive alternative to unethical procedures which used punishment techniques. However, in contemporary behaviour analysis texts discussion is given over to the ethical issues which arise from any intervention which will change, or impact upon a person’s life. It appears that the philosophies of gentle teaching and contemporary applied behaviour analysis are both concerned with the welfare of the individual, with delivering treatment in a dignified way, and with acknowledgement of an individual’s rights and intrinsic value as a member of society. Guiding philosophies within the fields of mental health and learning disability such as Normalisation or Social Role Valorisation (Wolfensberger, 1983) will have undoubtedly influenced the underlying philosophies of both gentle teaching and applied behaviour analysis.

Proponents of applied behaviour analysis acknowledge the limited efficacy of punishment techniques as illustrated by research finding (Griffin et al, 1984; Murphy & Wilson, 1981 cited in Yule & Carr, 1987). This has contributed to the development of the underlying philosophical standpoint of applied behaviour analysis and the recent developments seen within the field. Over the last 15 years, greater emphasis has been given to positive programming and there has been a marked reduction in the use of aversive techniques (Yule & Carr, 1987; LaVigna & Donnellan, 1986).

In summary the relationship between gentle teaching and applied behaviour analysis is not as polarised as the debate may suggest. There are clear similarities between their philosophies, underlying assumptions and intervention techniques. Highlighting these clear similarities proves to be a double edged sword for behaviourists. On the one hand condemning gentle teaching as ineffective whilst on the other hand pointing out the fact that it is nothing more than established behavioural techniques packaged differently (Jones et al, 1991).
Summary and discussion.

Gentle teaching is an intervention approach used with people with learning disabilities who show challenging behaviours. Supporters of this approach have claimed that it has never failed. However, research which has claimed to provide evidence for the efficacy of the approach can be clearly criticised with regard to methodological flaws and inaccurate reporting of data. Independent replication attempts do not provide support for the claim that gentle teaching is universally successful. The data indicates that gentle teaching leads to a reduction in challenging behaviour in some cases, no change in some cases and an increase in challenging behaviour in other cases.

Gentle teaching is heavily criticised for its lack of definition and explanation of intervention techniques and processes. This suggests that it is not well enough articulated to stand alone as an intervention approach. However it may be appropriate to consider the philosophical viewpoint of gentle teaching further. It could be argued that gentle teaching is no more than politically correct pontification, however there does appear to be value in the emphasis on mutual change, in particular emphasis on the responsibility of the carer to revise his or her attitude towards individuals with challenging behaviour. Additionally, empathy and unconditional positive regard (both requirements of gentle teaching) have been identified as important in the achievement of therapeutic benefits (Beutler et al, 1986).

Gentle teaching also has a value in that it appears to maintain staff morale. It is certainly a popular approach, with many services nation-wide claiming to be influenced by its basic tenets. Further testimony to its popularity is the gentle teaching national support network convened by The Royal College of Nursing. This apparent popularity may be due to gentle teaching’s political correctness, however it is likely to go further than that. By emphasising the need for attitude change, gently teaching enables caregivers to cope better with the chronic and pervasive difficulties of the people they work with.
Returning to the debate between gentle teaching and applied behaviour analysis perhaps it is not appropriate to compare the two as one is not comparing like with like. It is necessary to make distinctions between philosophically based and empirically based arguments. This suggest that the two approaches need not be mutually exclusive. Whilst not condoning a woolly eclectic approach, it may be possible to carefully integrate the most useful aspects of the two approaches. An appropriate combination of value-based interventions, high staff motivation and powerful, empirically validated behavioural procedures may lead to an effective and enduring intervention approach.
References.


ESSAY 3: CHILD, ADOLESCENT AND FAMILY

DOES COGNITIVE BEHAVIOUR THERAPY WORK FOR CHILDREN AND ADOLESCENTS?
Does Cognitive-Behaviour Therapy Work For Children And Adolescents?

Cognitive-behavioural interventions developed from advances in the domain of empirical psychology (research into cognitive psychology and cognitive abilities) and the domain of adult clinical psychology. For the purposes of this essay the term cognitive-behavioural therapy will be taken to represent therapeutic interventions which have a cognitive-behavioural emphasis developed from both domains.

As a point of departure in addressing the above question, aspects of cognition will be discussed. This provides a cognitive context for the differences between interventions. The essay will then go on to briefly outline the cognitive-behavioural techniques used with children and the adaptations which have been made from adult techniques. Some areas of application of cognitive-behavioural interventions with children are then presented with a review of outcome research. The final section of the discussion suggests two key areas which appear to require further consideration within cognitive-behavioural interventions.

Aspects of cognition and focus of intervention.

Cognitive-behavioural therapeutic interventions come in many guises, according to the aspect of cognition which is affecting a child's functioning. Before being able to usefully discuss whether cognitive-behavioural therapies are effective for children it is necessary to discuss aspects of cognition. It is proposed that many different cognitive features contribute to overall cognitive functioning (e.g. Ingram and Kendall, 1986). Cognitive content is the information actually represented. Cognitive processes are the procedures by which the cognitive system operates (e.g. attention, perception, memory, etc.). Cognitive structures (or schema) are suggested to influence the manner in which information is stored, processed and interpreted.
Problems with any of these aspects of cognition may lead to psychopathology and interventions vary according to the area affected. Therefore, cognitive-behavioural therapies can be categorised according to the required focus of the intervention. A distinction is drawn between interventions which aim to rectify cognitive skills deficits and interventions which aim to rectify cognitive distortions. Relating this back to the proposed features of the cognitive system, cognitive skills deficits refer to difficulty in the area of cognitive processes, whereas cognitive distortion is characterised by faulty or distorted cognitive structures (or schema) which "filter" information in an irrational or distorted manner resulting in irrational cognitive products.

This distinction can be traced back to the different historical factors which lead to the proliferation of cognitive-behavioural approaches. Developments in academic cognitive psychology leading to identification of cognitive skills deficits, whereas developments in clinical cognitive therapy leading to the identification of cognitive distortions.

Bearing this distinction in mind, some of the more widely used cognitive-behavioural techniques will be presented. Areas of adaptation for work with children and adolescents will be discussed.

**Cognitive-behavioural techniques.**

In a detailed review article, Spence (1994) describes the procedures involved in the most frequently used cognitive-behavioural approaches with children. These will be briefly outlined as a precursor to discussing outcome studies.

**Self control techniques.**

A three step framework of self-regulation was proposed by Kanfer (1975); a) self monitoring, involves attending to one's own behaviour, which is then compared to preset performance criteria during; b) self-evaluation. According to the outcome of self-evaluation, behaviour is adapted if required; c) Self-reinforcement involves rewarding
oneself with positive self-statements of events if performance has met the pre-set criteria.

Modifications of these steps has been observed according to the characteristics of the disorder being treated. For example when used as an intervention for impulsive children (Kendall and Braswell, 1985), greater emphasis is placed upon the increase of self-monitoring. Childhood anxiety and depressive disorders, however, are not characterised by a lack of self-control as may be the case in impulsivity. Depressed or anxious children tend to be highly aware of their behaviour and tend to be overly critical in their self-evaluation. Therefore, greater emphasis is required on setting realistic performance criteria for self-evaluation, and accurately evaluating both positive and negative features of performance (Stark, 1990).

Social perception skills training and Affective education.
This refers to the ability to accurate perceive social cues (gesture, tone of voice, facial expression, posture, etc.) in order to interpret feelings, intentions of others. Allied to this, affective education promotes the awareness of one's own and other's emotional state. The provision of skills to enable accurate interpretation of social cues and accurate recognition of emotional states are often important components of cognitive-behavioural therapies (Stark, 1990; Spence, 1994).

Problem solving techniques.
Based on the pioneering work of D'Zurilla and Goldfried (1971) this involves teaching an individual to identify the presence of a problem, to generate a range of alternative responses, to predict the likely outcome of each alternative, to select the response most likely to provide a successful outcome, and to evaluate progress.

Adaptations for children have seen the development of systems such as the Pre-school Interpersonal Problem Solving Inventory (PIPS) (Spivack and Shure, 1974). This involves presenting children with pictorial vignettes and asking them to generate as many solutions to the presented dilemma as possible. The PIPS has been criticised however as an assessment tool, as it considers the number of solutions generated and
does not address in any way their effectiveness. Further research has suggested that social competence in children is determined by the quality of their solutions not the quantity (Dodge et al 1986). Later assessment tools have integrated the findings of such research, however, many are still regarded as experimental and normative data is not extensive nor reliable across assessment tools (Spence 1994).

Approaches to teach problem solving skills to children often use self-instructional procedures in order to guide children through the steps of problem-solving, e.g. The Think Aloud programme (Camp and Bash, 1981). Although this is advocated for "older" children, an assumption is still made about the child's ability to realise that there is a problem present to be defined.

Self-instructional training.

Self-instructional techniques are frequently used as components in other cognitive and cognitive-behavioural therapies including interventions with impulsive children, depressed and anxious children, etc. Developed from the theories of language acquisition, self-instructional techniques involve teaching the child to direct her/himself by verbalising the task requirements as she/he performs them. Some schemes continue to have an adult model, with a progression through adult instruction, child's own instruction out loud, child's whispered self-instruction to the child directing himself using internal speech. (e.g. Kendall and Braswell, 1985).

Cognitive-restructuring techniques.

Cognitive restructuring techniques for children are based upon the work Beck and his colleagues pioneered with adults during the late 1960s and 1970s. The main principles are the same and are based around i) identifying the negative thoughts and maladaptive underlying beliefs and schema; ii) challenging those cognitions, and iii) generating more appropriate cognitive structures or schema in order to interpret their world and experiences in a more rational way.

Some adaptations for working with children are noted. Various techniques have been devised in order to identify children's cognitive structures (schema) and resultant
cognitive products (negative thoughts). Many of these are based upon techniques which have been successfully used with adults. Skilful interviewing, adapted to the child's developmental level and incorporating the use of concrete props such as toys and puppets, is claimed to elicit accurate information about thoughts and beliefs from children as young as 3 years old (Hughes, 1988). Video-taped recall whereby a child is videotaped whilst involved in a relevant task or situation, playing back the tape then serves as a prompt to the recall of their thoughts whilst they had been carrying out the task.

Thought listing procedures have also been adapted for children. Stark (1990) and Kendall and Chansky (1991) describe techniques which involve cartoon sequences and thought bubbles which facilitate recall of the child's relevant negative cognitions. Increased use of role play or behavioural testing followed by guided questioning are also suggested as effective strategies for identifying a child's thoughts during a relevant situation (e.g. Prins, 1986). However it has been noted (Kendall and Chansky, 1991) that even with the aid of guided questioning to recall their cognitions, children tended to think about the task itself and not their specific thoughts whilst carrying out the task.

Numerous questionnaires have been developed in order to help identify and record children's cognitions and thinking styles. For example the Children's Cognitive Error Questionnaire (Yost and Carroll-Wilson, 1986) which is intended to identify thinking biases in line with those suggested by Beck et al (1979) as occurring within adult depressed populations; the State-Trait Anxiety Inventory for Children (Speilberger, 1973); Revised Children's Manifest Anxiety Scale (Reynolds and Richmond, 1978). The Children's Anxious Self Statement Questionnaire (Ronan et al, 1988) and The Children's Cognitive Assessment Questionnaire (Zatz and Chassin, 1983) have a slightly different focus and aim to assess the frequency of negative thoughts pertaining to generalised anxiety and test anxiety respectively.

Standardised questionnaires have also been used to assess children's cognitive structures (schema, underlying attitudes and beliefs). Again these appear to be based upon adult equivalents and have been adapted for children by simplifying design or
making the questions more concrete in nature. For example, the KASTAN Children's Attributional Style Questionnaire (Kaslow et al, 1978) and Fielstein et al's (1985) Attributional Style Questionnaire which present the child with short vignettes of events and requires the child to choose between causal attributions (such as easy/difficult; skill/lack of skill, etc).

Once maladaptive thoughts and beliefs have been identified, the second stage of cognitive therapy involves challenging those negative cognitions. Within work with children and adolescents, there appears to be greater use of behavioural events or tests in order to gather evidence for or against the child's thoughts (e.g. Stark, 1990). Similarly the third step of cognitive therapy which involves the child generating more rational alternative thoughts and interpretations of events also appears to be given a more concrete form in work with children. Language is simplified for example, concepts such as "helpful" and "unhelpful" ways of thinking have been used; material is presented using pictures, cartoons, etc; children are presented with written or pictorial vignettes on which to practise generating helpful interpretations before their own experiences are drawn out and used (Spence, 1994).

In summary, the principles of cognitive therapy and cognitive restructuring techniques for children are the same as those developed for work with adults. Adaptations to help make these techniques accessible to children and those working with them are seen in making the concepts more concrete, using aids and props such as puppets, toys, cartoons, pictures and videos, simplifying language and putting a greater emphasis on behavioural testing and behavioural events for children to gather evidence to refute negative cognitions or to support newly generated, more rational alternatives.

Applications of cognitive-behavioural therapies and interventions.

This section will discuss some of the disorders for which cognitive-behavioural interventions have been used and will summarise outcome study research. A brief discussion of the empirical rationale for using cognitive-behavioural approaches for a
particular disorder will also be presented. This will be related to the model of cognition which distinguishes between disorders characterised by a cognitive distortion and those characterised by a cognitive deficit.

**Anxiety**

As in adult work, the cognitive-behavioural model of childhood anxiety regards anxiety disorders as a multi-faceted phenomenon involving the causally interrelated components of behaviour, cognition and physiology. The cognitive component is regarded as being characterised by cognitive distortion. That it to say, dysfunctional cognitive structures or schema "filter" information leading the child to interpret events and experiences in a negative and distorted way, resulting in a preponderance of negative thoughts which in turn effects physiology and behaviour.

Cognitive thinking biases such as catastrophising and over-generalisation have been observed in children who show anxiety in circumscribed situations such as test anxiety, dental anxiety, separation anxiety, fear of the dark, etc., (Leitenberg et al 1986). Many researchers have also found that such groups of children have high levels of negative self-referent cognitions (Prins, 1985, 1986; Zatz and Chassin, 1985). However these groups of children do not necessarily fulfil the criteria for clinically anxious populations. Francis (1988) has argued that these cognitive distortions have yet to be reliably identified in clinical populations.

In spite of this, parallels have been drawn between the characteristics of adult anxiety disorders and the characteristics which anxious children present with. Extensive research studies provide highly favourable outcome results for the efficacy of cognitive-behavioural therapy for the treatment of adult anxiety disorders (e.g. Clark, 1986; Durham and Turvey, 1987). Expectations of results of cognitive-behavioural therapy with anxious children are therefore high. Whilst it is frustratingly acknowledged that research into the use of this therapeutic approach with children is lagging dramatically behind that of adult research (Kendall and Lochman, 1994; Spence, 1994) results from those studies carried out to date are encouraging but not conclusive.
In an early study with children who had night time fears, Kanfer (1975) used a self-instruction approach to compare a positive self-statement condition (e.g. "I am a brave child, I can take care of myself in the dark"), a stimulus-oriented self-talk condition (e.g. "The dark is a fun place to be") and a nursery rhyme control condition (repetition of a nursery rhyme). Children in both of the self-instructional strategy groups were found to be able to remain alone in the dark for longer than the nursery rhyme control group. A later meta-analysis of the effectiveness of self-instructional training carried out by Dush et al (1989) also suggested that this was an effective intervention for children with anxiety disorders. However, when compared with a similar meta-analysis of self-instructional training with adults, (Dush et al, 1983), the approach was found to be half as effective with children.

A multi-faceted cognitive-behavioural programme comprising relaxation, problem-solving, modification of self-talk and behavioural exposure to anxiety provoking situations was compared with a waiting list control group by Kendall et al (1992). Subjects all had a diagnosis of anxiety disorder and were randomly assigned to either the waiting list or treatment group. Pre- and post-measures of anxiety were taken including children's self-report on standardised questionnaires and parental report of children's anxiety and related behaviour. At post-treatment assessment, significant reductions in reports of anxiety from both children and parents were observed for the treatment group. In addition, from a structured diagnostic interview with parents, 60% of the treatment group no longer had a diagnosis of anxiety disorder compared to 7% of the waiting list group. Immediate post-treatment results are excellent, however it is unclear as to whether these improvements were maintained at long term follow-up.

Kane and Kendall (1989) showed statistically significant post treatment improvements in anxiety levels in children as reported by the child, parents and an independent professional (able to diagnose anxiety disorders in children), following a cognitive-behavioural intervention programme. However, the sample size of just 4, is too small to make any meaningful predictions about wider efficacy of the approach. Some good results have been observed with non-clinical groups of anxious children who have received cognitive-behavioural input to provide them with coping strategies.
to better manage their situational, reactive anxiety. For example Seigel and Peterson (1980) worked with children who were expecting surgery and as a result were experiencing a certain degree of expected anxiety. Children who were taught strategies to cope with their anxiety were found to be less anxious, more co-operative and to have lower heart rates before surgery than children who had received no preparation. Although this indicates that furnishing non-clinical populations of children with cognitive-behavioural coping strategies is effective in reducing anxiety, it would be premature to make generalisations about the efficacy of this intervention with anxiety-disordered children.

In summary therefore, there are a few studies which report encouraging results for the efficacy of cognitive-behavioural therapy with children with anxiety disorders. The most notable of these have a greater emphasis on cognitive restructuring techniques although are multi-faceted in nature. Problems in experimental design such as small sample sizes, lack of follow-up data, use of non-clinical populations, etc. make conclusions about the efficacy of cognitive-behaviour therapy with anxiety disordered children difficult to draw.

**Depression**

The classification of depressive disorder in children has caused controversy for many years. Indeed, Birleson (1981) noted that according to the classification systems at that time for psychiatric disorders in childhood and adolescence, "a child with depressive features can be classified in no less than fourteen different ways" (Birleson, 1981, p. 73). However, common features of depressive disorders in children and adolescents are reported in the literature. Many of these are cognitive in nature and relate to both cognitive deficits and cognitive distortions.

Depressed youngsters are assessed as having deficits in interpersonal problem solving skills (Sacco and Graves, 1984) and deficits in self control strategies (Kaslow et al, 1984). Additionally, depression in children is characterised by cognitive thinking biases such as over-generalisation of negative outcomes, catastrophisation, attention to negative aspects of an event or their own performance (Leitenberg et al 1986; Kendal
et al 1990). It has also been found that children with depressive disorder have an external locus of control (Mullins et al 1985), are more likely to attribute positive events to external factors and are more likely to inappropriately accept responsibility for the occurrence of negative events (Bodiford et al 1988). Depressed children commonly have low self esteem, a low perception of their academic and social competence. They are more likely to set high or perfectionist standards for themselves and are more likely to evaluate themselves negatively or self-punish, than non depressed children (Kaslow et al 1984). These findings are consistent with both cognitive processing distortions and cognitive processing deficits and indicate amelioration by cognitive-behavioural interventions.

An extensive school-based treatment programme for preadolescent children who reported depressive symptoms was evaluated by Butler et al (1980). The study compared two treatment conditions with a no-treatment placebo group. One of the treatment conditions addressed cognitive distortions and was based on the work of Beck et al (1979). The other treatment condition addressed cognitive deficits and comprised social perception training, interpersonal problem solving skills. Results indicated that both treatment conditions and the control group experienced a reduction in depressive symptoms. Therefore these benefits can not be attributed to the cognitive-behavioural interventions.

Stark et al (1991) conducted a study which evaluated the effects of a multi-component cognitive-behavioural treatment package for depressed children. The package addressed both the suggested cognitive deficits and distortions by including self control strategies; teaching of social skills; and cognitive restructuring based on Beck's cognitive therapy. This intervention package was compared with traditional counselling which offered a non-directive intervention. Twenty-four children took part and were randomly assigned to the two treatment groups and received treatment in small groups over 14 weeks. Post treatment evaluation indicated that the cognitive-behavioural intervention was superior in producing improvements in depression. However these benefits were not maintained at 7 month follow-up. Not only does this cast doubt on the long term effects of cognitive-behavioural interventions for childhood depression, it
also draws attention to the uneconomical nature of a treatment programme which lasts 14 weeks and which does not maintain its benefits at 28 week follow up. In today's competitive health market which demands proven efficiency and efficacy of clinical interventions one wonders whether such limited outcome statistics would make such an intervention tenable.

Reynolds and Coats' (1986) compared a relaxation intervention with a cognitive-behavioural intervention and a waiting list control group. The cognitive-behavioural intervention was superior to the two other conditions in reducing depressive symptoms and treatment effects were maintained at a five week follow up. However the long term effects of cognitive-behavioural therapy for depressed children remain elusive.

As with anxiety disorders, outcome studies of cognitive-behavioural therapy with depressed children provide encouraging results, however, results to date are inconclusive.

**Anger, Impulsivity, Aggression.**

Research into anger and aggression in children suggests that these conditions are in fact characterised by both cognitive processing distortions and cognitive processing deficits. An information-processing model of childhood anger and aggression is proposed (Rubin et al, 1991; Dodge, 1985) which suggests that aggressive children exhibit dysfunctional cognitive processing of social material, situations and experiences.

Aggressive children and adolescents have been found to attend to fewer cues when interpreting the behaviour of others, to interpret ambiguous behaviour of others as aggressive, and to under-perceive the level of their own aggressive behaviour in one to one conflicts (Lochman, 1987; Dodge et al, 1990). It is suggested that aggressive children have an unusual pattern of affect-labelling and appear to misperceive vulnerable emotional states (such as fear or sadness) as anger (Kendall and Lochman, 1994). Studies on aggressive children's beliefs and expectations of interactions suggest that aggressive children expect that an aggressive solution to a problem will be more likely to result in a favourable outcome (Perry et al, 1986). Problem-solving in
aggressive children appears to be characterised by a greater number of aggressive solutions (Lochman and Lampron, 1986).

From the empirical evidence gathered on the characteristics of aggression in children, Kendall and Lochman (1994) suggest that cognitive-behavioural programmes need to address and intervene with children's attributional processes of others' behaviour, their affect-labelling, their expectations of the positive outcome of aggressive behaviour, their lack of non-aggressive problem-solving skills.

Working with psychiatric inpatients who displayed aggressive behaviour, Kazdin et al (1987) found that a 20 session cognitive-behavioural programme to enhance problem-solving skills produced significant reductions in aggressive behaviour which were maintained at 1 yr follow-up. Lochman et al (1984) also recorded reductions in aggressive behaviour both at school and at home following cognitive-behavioural intervention aimed at enabling aggressive children cope with anger. In addition they noted that self-esteem was enhanced when the programme had a greater emphasis on behavioural goal setting. In a literature review (Kendall and Lochman, 1994) there is mention of unpublished results which indicate that at a 3 year follow up of this cohort, treatment effects were maintained. Although this report is encouraging as it suggests cognitive-behavioural interventions provide sustainable improvements, it must be treated with caution as information on the subjects included in the follow up, research design of the follow up and statistical data are not available for scrutiny.

An earlier study by Kendall and Braswell (1982) compared a cognitive-behavioural intervention with a behavioural intervention and an attention-control intervention which aimed to increase children's self-control. The subjects were 27 children aged 8-12 years all of whom were assessed as being "non-self-controlled". Many of the children displayed aggressive and impulsive behaviour although the extent of this is not reported. The cognitive-behavioural condition included self-instructional training, modelling and behavioural contingencies. The behavioural condition included modelling and contingencies. Results showed that following a 12 session programme, teachers' blind ratings of self-control was improved for the cognitive-behavioural
group, and teachers' blind ratings of hyperactivity was improved for both the cognitive-behavioural and behavioural groups. However parents' ratings of behaviour showed no change. At 10 week follow up, the children who had received cognitive-behavioural therapy had maintained their improvements. However, no long term benefits were maintained at 1 yr follow up. Although some benefits of cognitive-behavioural therapy appear to have been shown, this study suggests that the approach offers poor generalisation of benefits and poor long term maintenance.

Attention deficit disorder with hyperactivity.

Current conceptualisations suggest that children with ADDH present with increased activity, impulsive behaviour, deficits in attention and deficits in self-regulation of behaviour (Barkley, 1990). Given the nature of the cognitive deficits and behavioural difficulties which are taken to characterise ADDH, cognitive-behavioural therapies appear to be ideally matched to treatment of this disorder. Additional support for this supposition can be gathered from indications of cognitive-behavioural therapy's partial success with impulsive children (Abikoff and Klein, 1992; Dush et al 1989 meta-analysis of self-instructional training) and aggressive children (Lochman et al 1984). Moreover, the use of stimulant medication, for treatment of ADDH, remains controversial and although medication appears to provide immediate results, children's difficulties often return to pre-treatment levels on withdrawal of medication (Kendall and Lochman, 1994; Whalen et al, 1985).

Despite the apparently ideal match of treatment to disorder, outcome studies examining the efficacy of cognitive-behavioural therapies for ADD have indicated disappointing results (Kendall and Lochman, 1994; Whalen et al, 1985). For example Abikoff and Klein (1992) found that whilst cognitive-behavioural interventions were effective in reducing impulsive behaviour in children, no benefits were observed in "on-task" behaviour, nor in maintenance of attention. Whalen et al (1985) provide an excellent summary in their review article which suggests that for some evidence has been obtained for the efficacy of cognitive-behavioural therapy in the treatment of ADD. However they point out that for every study which indicates maintenance of
improvement, generalisation across settings and behaviours, and other positive treatment effects, there is another study which records no benefits whatsoever.

It is possible that the multi-component nature of ADD which suggests cognitive-behavioural therapy is an ideal match, is perhaps one of the reasons for such varied results, as treatment which leads to improvement in one deficient area of cognitive processing, or one behavioural component may not result in improvement in another area. Kendall and Lochman (1994) also note that the cognitive-behavioural treatments vary greatly across studies which is bound to result in differences between findings. However, is this enough to account for such inconsistencies in results and the seeming difficulties in replication?

Additional areas of consideration.

The above sections discuss the outcome research for the application of cognitive-behavioural therapies for childhood disorders. There is empirical evidence which suggests that these disorders can be conceptualised within a cognitive-behavioural framework, however outcome study results are not conclusive and provide patchy support for the efficacy of cognitive-behavioural therapies for children. In particular, generalisation and long term maintenance of treatment effects have not been established. Outcome studies of cognitive-behavioural approaches with adults appear to have provided more consistent findings and generalisation and long term maintenance have been more conclusively found (see Hawton et al, 1989). The following sections will outline possible factors which may contribute to the observed differences in the application and efficacy of cognitive-behavioural approaches between adults and children. Two areas to consider are developmental issues and influence of social systems.

Developmental issues

It is understood that there are identifiable and predictable patterns of growth and development throughout the life span. There are many different theories of child
development (theories of cognitive, social, emotional, physical and moral development) which have illustrated or supported this understanding. However these theories do not appear to be well integrated into cognitive-behavioural models of clinical practise with children. Perhaps this is due to the seeming divergence in goals of the two disciplines; developmental psychology aiming to identify universal patterns of development, whereas clinical psychology is engaged in the treatment of groups which deviate from the norm (Forehand & Wierson, 1993). Yet the two disciplines complement one another. As in other areas of psychology (e.g. cognitive neuropsychology) the study of dysfunctional groups can enhance the understanding of functional groups. More importantly for this discussion, in order to identify and understand deviant groups it is essential to have a good understanding of normal child development.

Achenbach (1982) for many years has advocated a developmental emphasis in child clinical psychology, expressing the necessity of conceptualising the child within a framework of progression along the dimensions of cognitive, social emotional and physical development. Such a comprehensive developmental perspective is important on many counts. Firstly, as briefly mentioned above, knowledge and understanding of normal development across all domains provides the context for assessing whether a child's behaviour or presentation are abnormal or dysfunctional. For example, should a child of 5 yrs be expected to understand the social rules surrounding personal possessions?; should a child of 3 yrs be expected to concentrate without direction on a task for half an hour?; is it within a normal developmental trajectory for a child of 10 yrs to be afraid of the dark?

Secondly, once an area of difficulty has been established it is essential to match the intervention to the abilities of the child. Information about a child's development provides a theoretical rationale that the child is capable of the procedures and skills being undertaken or taught.

Thirdly, it is helpful to also have an understanding and knowledge of the developmental tasks faced by children. Such developmental tasks are culturally and socially defined and can be viewed as the changing demands with which a child is faced at different times in their life (Forehand and Wierson, 1993). Psychological and behavioural
difficulties may be more likely to arise if a child is unable to achieve a developmental task; likewise, failure to achieve a developmental task may be indicative of pre-existing behavioural or psychological difficulties. An understanding of the culturally and socially defined tasks which face a child through his or her development will facilitate design and implementation of intervention strategies.

The importance of a developmental perspective in clinical interventions with children is clear. It is not sufficient to treat children with a diluted version of adult-oriented cognitive-behavioural interventions. Greater consideration of developmental issues may well improve the efficacy of cognitive-behavioural therapies with children.

Influence of Social Systems

Family or systems theorists argue that cognitive-behavioural therapies working with the individual child will never be effective, as "the basic tenet of all systems theories is that the family or interpersonal context, rather than intrapsychic factors is the critical variable determining an individual's behaviour" (Turkewitz, 1984, p.69). Whilst the remit of this essay does not allow further investigation of this argument or the basis of systems theories per se, there are elements of systemic theories which are not contrary to a cognitive-behavioural approach and which need to be integrated into cognitive-behavioural interventions to increase their efficacy.

A child may be viewed as being embedded in and reciprocally interacting with a number of social systems. The most obvious of these is the family, however other systems are equally as pertinent in assessment of a child's presentation and in subsequent intervention. These may include, extended family, school, peers, local neighbourhood, and wider social systems which encompass social and cultural values and expectations. A child's role and reciprocal interactions within each of these social systems is regarded as influencing his or her behaviour. If the child's social systems are not receptive to his or her change in behaviour, then the systemic interactions are likely to cause the child's behaviour and or cognitions to revert to previous maladaptive levels. In order to promote generalisation and maintenance of treatment benefits, cognitive-behavioural therapies should capitalise on the reinforcing possibilities of a
child's social systems. This may necessitate working directly with key individuals such as parents, peers or teachers, in the child's social environment (Braswell, 1991).

**Summary and concluding remarks.**

In addressing the question of efficacy of cognitive-behavioural therapies with children and adolescents, this essay progresses from a "cognitive context" of aspects of cognition and highlights the distinction between interventions which address cognitive distortions and those which address cognitive deficits. Most widely used cognitive techniques are outlined and the outcome research is discussed.

The outcome research offers some encouraging results for the efficacy of cognitive-behavioural interventions for child psychopathology. However, the results are by no means equivocal and provide inconsistent evidence for the efficacy of such approaches. Most notably, long term maintenance of treatment effects have not been well established nor has generalisation to other areas of functioning or other situations. Evaluative research into cognitive-behavioural approaches in the field of adult psychopathology provides more consistent evidence for efficacy, generalisation and maintenance. Whilst it is acknowledged that the amount of research into application of these approaches with children lags some distance behind that of research into adult disorders, it is suggested that there are qualities about the younger client group which may contribute to the observed difference in research results. Firstly, issues of child development and secondly the influence of social systems. These two areas require further consideration within cognitive-behavioural models of child psychopathology and further integration into cognitive-behavioural interventions. It is clearly not enough for children and adolescents to receive diluted versions of adult-oriented cognitive-behavioural interventions. If this is the case, then efficacy is likely to be limited.
References.


ESSAY 4: OLDER ADULTS

WHAT IS ENTAILED IN PERSON CENTRED DEMENTIA CARE?
What is entailed in person-centred dementia care?

Person-centred dementia care has been developed following the inadequacies of the medical model to account for all the phenomenon of a dementing process. A reconsideration of possible inter- and intra-personal variables which may have a bearing on the process of dementia have lead to an alternative conceptualisation of dementia with the process of a dementing illness being characterised by the interplay between neurological impairment and interpersonal factors or "social psychology". As neurological impairment is present and irreversible, the person-centred approach puts most emphasis on the role of social psychology in promoting relative well- or ill-being in dementia sufferers. The index of well or ill-being is regarded as the degree to which personhood is maintained during the experience of dementia.

This essay will progress through the above introduction expanding on the areas summarised above. Theoretical considerations will be addressed first and as a point of departure inadequacies in the medical model will be highlighted. The alternative social-psychological conceptualisation of dementia will be presented and the key concepts of social psychology and personhood will be considered. The essay will then address the clinical implications of person-centred dementia care. Areas of assessment of the care environment and possible outcome indicators of effective person-centred care will be discussed.

Theoretical considerations. - The medical model of dementia.

The medical model of dementia has been the prevailing view in the field for the past 20 years. It is a causal, linear sequence which puts exclusive emphasis on neurological impairment as the determinant of dementia. The model may be expressed as:

\[ X \rightarrow \text{neuropathic change} \rightarrow \text{dementia} \]

In the case of multi-infarct dementia, X presents a bleed or anoxia within brain tissue which leads to brain damage and hence dementia. However, with regard to other dementing
illnesses such as Alzheimer's disease, "X" has proved somewhat more difficult to quantify (Terry, 1992).

As well as difficulty in identifying the "structural" causes of dementing illnesses, the medical model is not able to accommodate all the phenomenon of the process of dementia. A critical review of the neuropathology research highlights the inadequacy of regarding neuropathology as the sole determinant of dementia. Kitwood (1987; 1988) offers a detailed critical review of the core papers in the neuropathology field. This includes research at post-mortem (e.g. Blessed et al, 1968; Tomlinson et al, 1968, 1970; Roth, 1980) and research using brain scanning techniques before death (e.g. Jacoby et al, 1980; Jacoby and Levy, 1980; Naguib and Levy, 1982; Bird et al, 1986). In summary, the following criticisms of the medical model can be derived from the neuropathology research.

Firstly, far advanced neurological damage is consistent with clinical presentation of dementia. This suggests there is a neuropathological threshold beyond which it is not possible to maintain normal functioning. However, this threshold varies from person to person and is not fixed as one would expect if neuropathology is the sole determinant of dementia.

Secondly, the neuropathological processes identified in demented people are found to be present to some degree in the brains of well-preserved older adults. And conversely some older adults become demented with very little accompanying neuropathology. These identified cases may be regarded as contradicting the medical model.

Even with the introduction of the term pseudodementia (a catchall category to accommodate those research cases of dementia which at post-mortem do not show commensurate organic impairment, and those clinical cases of dementia which appear to improve or stabilise), the correlation between clinical presentation of dementia and neuropathology is not sufficient to support the medical model. In statistical terms, only a small amount of the variance is accounted for by neuropathology. This suggests that there may be additional contributory factors.
An enhanced psycho-social conceptualisation of dementia.

The view that there may be other factors contributing to the process of dementia is not new. Rothschild (1956) claimed that dementia could not be wholly accounted for by brain damage and Barnes et al (1973) proposed a "cycle of dementia" whereby the experience of dementia was inextricably linked to social-psychological factors affecting the life of an older person. However over the last 15-20 years these multi-faceted hypotheses of dementia were superseded by the medical model and biomedical examinations of neuropathology. These research techniques are persuasive as they are concrete, scientific and purely technical in approach which requires the exclusion of person-related variables. Yet the inability of the biomedical model to adequately account for the experience of the dementing process suggests a reconsideration of person-related variables may be appropriate.

Kitwood (1993; 1996) has proposed that the clinical manifestation of dementia can be conceptualised as arising from a complex interaction between five intra- and interpersonal factors:

\[ D = P + B + H + NI + SP \]

Personality (P) comprising of "constitutionally given" tendencies and traits, and the repertoire of styles of coping with crisis, loss and change, defences against anxiety, etc., which have been influenced and reinforced through the outcome of social learning.

Biography (B) representing an individual's life-story: childhood, family, occupation, interests, etc.. Individuals will vary in their experience of life, some may begin to experience dementia with many formal support structures intact, whilst others may have encountered destabilising and demoralising life changes.

Physical Health (H) is clearly an important factor as older adults become more prone to experiencing illness and physical problems as health fails. Some degree of confusion may be accounted for at a metabolic level (e.g. naturally occurring toxins, build up of medication,
hormonal imbalance, vitamin deficiency, etc.). Other health problems such as reduced mobility and reduced acuity of senses may also have an effect on mental functioning, may influence the ability to interact socially, and is likely to affect the individual's view of self.

Neurological Impairment (NI) reduces the capacity for active cognition involved in storing, processing information, executing plans, etc. This varies according to location, extent and type of neurological damage.

Social Psychology (SP) is characterised by "the fabric of life"; the social environment which the individual is surrounded by and embedded in during the course of everyday life.

This conceptualisation permits consideration of an individual's experience of dementia rather than consideration merely of the "technicalities" of the disease. It permits a person-centred conceptualisation of the process of dementia. Parallels can be drawn between this model and the process of psychological formulation of a problem, with acknowledgement of these individual factors providing an opportunity for understanding the individual's experience of dementia within the context of their past and present life experience.

The importance of social psychology and personhood.

Taking the multi-faceted conceptualisation, Kitwood (1996) proposes that at any one point in time, the symptomatic manifestation of dementia arises from the complex interaction of the five variables. The progression of the dementing illness is, however, influenced by the interplay between neurological impairment and social psychology. Given that neurological impairment is irreversible, social psychology may be regarded as the key variable which is open to change.

Kitwood proposes that social psychology is the key factor in influencing well-being in dementia (Kitwood & Bredin, 1992). He proposes two extremes of social psychology; "malignant" which has a negative effect of well-being and "benign" which has a positive effect on well-being. Kitwood's index of well-being is the extent to which personhood is
preserved. The two concepts of social psychology and personhood are necessarily closely related, however, to promote clarity, the concept of personhood will be briefly addressed before the social psychology is expanded upon.

Personhood, or sense of self may be widely viewed as a construct derived from having a sense of agency and control over one's life, a sense of validation and personal worth and a confidence of basic security in life. As such, personhood is a socially-bound construct and exists in one's relation to others. This concept of personhood is based upon psychodynamic principles and the development of selfhood in infancy as outlined by Winnicott. As we mature, we develop inner defences to protect our personhood. For example, if a hurtful remark is made to us, our cognitive capacity allows us to rationalise the interaction and understand that the comment is inaccurate and that it was in fact due to the other person's stress (Kitwood, 1996). Through neurological impairment, the world of a dementia sufferer may be regarded as beginning to fragment. Under such circumstances, inner defences may become weakened or shattered. Thus an individual with dementia may be regarded as being more susceptible to influence from social-psychological factors. Through this example, we have returned to the issue of social psychology. As personhood is a socially-bound construct and maintenance of personhood is an index of well-being, so social psychology is the vehicle through which well-being is promoted or obstructed.

Kitwood (1988, 1993, 1996) describes malignant social psychology as those interpersonal processes and interactions occurring within the context of the care environment. Through analysis of critical incidents and observation of various care environments, Kitwood (1990) articulates various types of interaction all of which are damaging to an individual's personhood. These include:

- **Treachery** - the use of dishonest representation or deception in order to obtain compliance.
- **Disempowerment** - doing for a dementia sufferer what he or she can in fact do, albeit clumsily or slowly.
- **Condemnation** - blaming; the attribution of malicious or seditious motives, especially when the dementia sufferer is distressed.
**Intimidation** - the use of threats, commands or physical assault; the abuse of power.

**Stigmatisation** - turning a dementia sufferer into an alien, a diseased object, an outcast, especially through verbal labels.

**Outpacing** - the delivery of information or instruction at a rate far beyond what can be processed.

**Invalidation** - the ignoring or discounting of a dementia sufferer's subjective states - especially feelings of distress or bewilderment.

**Banishment** - the removal of a dementia sufferer from the human milieu, either physically or psychologically.

**Objectification** - treating a person like a lump of dead matter; to be measured, pushed around, drained, filled, polished, dumped, etc.

(from Kitwood, 1993; p. 542)

As well as the direct care environment, it seems appropriate to consider the wider societal context as an influential factor for an individual's personhood. For example, within our society it is arguable that many common experiences of ageing are potentially damaging to personhood. The extended family is disappearing and with it the honoured, valued role of family elder. As older people become less mobile, social networks of friends (perhaps a substitute for the extended family) become more difficult to access. Retirement brings with it reduced wealth and the loss of a valued role as part of the workforce. Older people could be regarded as being poorly integrated into (or maybe even segregated from) society by the provision of "special" services for OAPs (e.g. hairdressing, cafes, shops, etc.). All of these factors may be seen as assaulting the components of personhood; i.e. sense of agency, sense of worth and validation from others; sense of security. Thus older adults with dementia can be regarded as being exposed to the rigours of malignant social psychology at two levels; the interpersonal level in care delivery and a wider cultural and societal level.
Clinical implications of person-centred dementia care.

Assessment of the care environment.

The person-centred conceptualisation of dementia has lead Kitwood and the Bradford Dementia Research Group to develop a method of evaluating the care process in formal settings. The method is called Dementia Care Mapping (DCM) (Kitwood & Bredin, 1992) and aims to take a person-centred view of the care received. The standpoint of the dementia sufferer is taken and through direct observation inferences are drawn from behavioural cues. Three ratings are made during every 5 minute period; the individual's activity, the value of the caregiver's intervention (malignant/benign) and the individual's state of well- or ill-being. The last two are given a quantitative rating according to a scale corresponding to operationalised categories and conditions. Various care scores and care quotients can then be calculated to assess the quality of care delivery (e.g. Wilkinson, 1993).

The emphasis which DCM places on the standpoint of the recipients of care through ratings of relative well-being, and the combination of this measure with ratings of caregiver's interventions is certainly admirable. So too are the efforts to engender reliability and validity into the rating system through operationalising instances of behaviours, categories and conditions. However, DCM is not free of all the potential drawbacks of data collection through direct observation (and as such results should be treated with suitable caution). For example, the presence of a third party will influence behaviour, there is an element of rater's subjectivity, and raters are required to make inferences from behavioural cues.

Processes involved in person-centred dementia care.

Taking the first level of social psychology, the interpersonal interactions within the context of the care environment, the greatest clinical implication is for the need of "benign social psychology." This is interpersonal interaction which promotes and/or maintains personhood in an individual experiencing dementia. Drawing on psychodynamic principles (e.g. Winnicott's work with regard to infant development), Kitwood (unpublished manuscript) suggests that in terms of personhood, the needs of an individual suffering from dementia are
similar to the needs of an infant. In the same way as an infant who is developing selfhood needs a symbiotic relationship with the mother, a dementia sufferer, in order to maintain personhood, needs a similar relationship with those significant others who are delivering care.

Examples of processes which constitute benign social psychology are provided as:
(summarised from Kitwood, 1996)

*Holding* - The metaphorical provision of a safe, steady place where powerful and frightening emotions can be experienced without an individual becoming overwhelmed. As in the care of children, this may involve physical holding.

*Validation* - Acceptance of the reality and subjective truth of individual experience, rather than dismissing it as unreal. It is often suggested that Reality Orientation if used in a rigid, insensitive way can be dismissive of subjective experience. The work of Feil (1993) in the development of Validation Therapy has proven that the concept of validation can be beneficial, even though Feil's emphasis on the need for resolution of issues from earlier stages of life is somewhat suspect.

*Facilitation* - Enhancing an individual's performance by providing those parts of an action which are missing, but providing no more than that. Responding to a gesture in such a way as to evoke a further response and provide the interaction with structure and meaning. An individual's gesture or action is enhanced so as to make it a complete and meaningful action in the social world. The analogy of a skilled tennis player managing to return the shots of a beginner so as to maintain a rally is useful here.

*Celebration* - The mutual engagement of carer and person with dementia in an enjoyable activity. Both parties having an equal status in the interaction rather than the parent-child type interactions which may characterise other interactions in dementia care.

The above processes are far from the level of articulation required for a model of therapeutic intervention, although Kitwood would claim otherwise (Kitwood, 1990).
Rather they should be regarded as providing a philosophy of care at the level of care delivery and interpersonal interaction. Social role valorisation may be regarded as a corresponding philosophy of care at the wider societal and cultural level. Indeed the Kings Fund Paper, "Living Well Into Old Age" (1986) has gone some way towards indicating how the principles of social role valorisation are applicable to older adults and particularly to people with dementia.

Outcome studies and related research.

Although limited, there do appear to be some studies which have provided evidence for the multi-faceted model of dementia and evidence of positive outcome of person-centred dementia care. A longitudinal prospective study examining late onset dementia within a Swedish population, has made preliminary findings of various psychosocial risk factors occurring throughout the lifespan (Persson & Skoog, 1996). This provides further credence to the theory of a multi-faceted, person-centred conceptualisation of dementia.

Rovner et al (1990) report stability in the level of care required in a group of demented individuals who received an individualised programme of specialist care, as compared to a group of individuals who continued to receive regular care. This study is encouraging for proponents of person-centred dementia care approaches as it provides evidence that dementia does not represent an uncontrollable degeneration dictated by neurological impairment (as is implied in the medical model). However, there are many possible compounding variables which are not reported or acknowledged. Firstly, ratings of level of care required made by independent professionals would have helped to avoid any possible biased reporting from the specialist care staff group who may have been influenced by high expectations that the specialist care will have been better than the regular care. Secondly, as acknowledged by the authors, the cost of specialist care far outstripped the cost of regular care, therefore the participants in the study were self-selecting according to the ability to pay. Finally, as care units in America are reimbursed according to the functional capacity of their patients, it is possible that reporting of level of care required is influenced by financial considerations.
Sixsmith et al (1993) suggest they have found evidence for the notion of "remenia", an assessable improvement in the functioning of dementia sufferers. They compared three different types of dementia care home and in one home observed a temporary improvement in the ability and presentation of the recipients of care as assessed by measures on a standardised behaviour rating scale. This was corroborated by staff report, case notes, multi-disciplinary team members' report and case discussion. Although it is possible that results were influenced by overly positive reporting by staff, the authors suggest that this would have been more likely to have occurred in all three of the homes. In addition, the authors claim that the relative insensitivity of the standardised measure used makes it unlikely that the improvements were down errors in recording data. As a result, the authors suggest that the improvements observed were due to the influence of environment and delivery of care on the residents' experience of dementia.

Concluding remarks.

In terms of what is involved in person-centred dementia care, this essay has addressed the theoretical considerations and the resultant clinical implications.

In terms of what a person-centred approach to dementia provides, firstly it provides a more holistic alternative to the medical model and is certainly able to accommodate some of the inadequacies which the medical model embodies. Although the approach is not intended to deny the existence of neurological impairment, it could be considered as representing a degree of naïveté with regard to the devastating impact of this neurological impairment. On the other hand, the person-centred approach goes beyond promoting an ethical need for high quality, individualised social care but articulates that poor quality care can actually contribute to and accelerate the progression of a dementing illness.
References.


ESSAY 5: CHILD HEALTH

PSYCHOLOGICAL ADJUSTMENT TO CYSTIC FIBROSIS: CONSIDERATION OF POSSIBLE MEDIATING FACTORS.
Psychological adjustment to cystic fibrosis: consideration of possible mediating factors.

Cystic fibrosis is the most common fatal genetic disease. It is a recessive genetic disorder with about 1 in 4 adults being carriers. Children of carriers have a 25% chance of inheriting the disease. Recent prevalence rates for the USA and UK are quoted as being 1 in 2,000 live births (Royal College of Physicians, 1990; CF Foundation, USA, 1993). Cystic fibrosis causes a dysfunction of the endocrine glands which go on to produce excessively thick, sticky mucus. The function of many organs is disrupted by ducts and passageways becoming blocked or clogged. In particular the pancreas is unable to deliver essential digestive enzymes to the gut. If untreated adequate digestion and absorption of food is severely lacking and would quickly result in malnutrition. The pulmonary airways and bronchial passages become clogged, radically increasing the incidence of infection. Repetitive infections progressively destroy the lungs and pulmonary failure accounts for the majority of deaths in cystic fibrosis. Other organs commonly affected include the liver and the reproductive organs (Welsh & Smith, 1995).

There is no cure for cystic fibrosis. Treatment consists of management of symptoms and the regime is extensive and relentless. Chest physiotherapy is carried out 2 or 3 times per day to facilitate expectoration of the mucus from the lungs. Antibiotics, bronchodilators and agents to try to thin the mucus are required in an attempt to maintain lung function and keep them clear of infection. Pancreatic enzymes, vitamins, nutritional supplements and high calorie diets are required to compensate for compromised gastrointestinal functioning.

The experience of cystic fibrosis is likely to impact upon the daily life of the child and their family. As they grow up, children face developmental tasks, the achievement of which are integral to their sense of self and psychological well-being (Erickson, 1983). The child’s experience of cystic fibrosis and others’ responses to it may hinder
achievement of these tasks. For example, the school aged child is faced with tasks of developing relationships with peers and increasing autonomy and initiative. As a result of cystic fibrosis a child may miss a large amount of school and time with peers; they may be seen as different or feel different to others due to taking medication at school or constantly coughing up mucus; due to the rigours of the management regime they cannot have the same flexibility as other children in going on trips, staying over at a friend’s house. Adolescence poses another range of tasks for the maturing young person such as increasing independence from the family, developing close relationships with peers and possibly life partnerships. Cystic fibrosis may present the adolescent with additional hurdles to fulfilling these tasks. The experience of small stature, delayed puberty and issues of infertility may affect body image, identity and self esteem.

Independence can be compromised by a necessary dependence upon the family and medical profession for continued management of the disease.

The family (parents and siblings) have to face the stress of diagnosis, often grieve for the healthy child they did not have, may face personal recriminations and self-blame associated with genetic inheritance. They will have the anticipated loss of the child as they witness the child’s inevitable physical decline, followed by a realised loss when their child dies prematurely. From a practical point of view, the family must adopt a whole new way of life organised around the extensive regime to manage the disease.

Families and children must therefore cope with the physical effects of cystic fibrosis (short stature, chronic hacking cough, digestive complications, etc.), frequent clinic visits and hospitalisations, the time intensive management regime and yet are still faced with inevitable physical decline and early death. It is understandable to assume that heightened levels of psychopathology and emotional distress would be observed in both children with cystic fibrosis and their families. However, recent literature (e.g. Kashani et al, 1988) and clinical impressions (Wilson et al, 1996) suggest that such an assumption would be misguided. This essay will outline the research findings and will consider the possible factors which may mediate psychological distress in individuals with this life threatening disease. Individual children with cystic fibrosis will be the initial focus and evidence for the possible mediating factors of age (stage of
development), gender, illness severity, perceptions of and beliefs about illness will be presented. The family perspective will then be taken and the role of family functioning as a mediating factor will be considered.

Age and stage of development.

Taking incidence of behavioural problems as an indicator of psychological adjustment, Cowen et al (1985) did not find any significant differences between a group of pre-school children with cystic fibrosis and a group of healthy controls. However, when comparing children aged 6-11 years with their healthy siblings, Simmons et al (1987) found prevalence rates of psychiatric disturbance of 23% and 15% respectively. A study using self-report measures of psychiatric disorder found adolescents with cystic fibrosis aged 12-15 years reported a higher degree of symptomatology than age-related standardised norms, although the difference did not reach statistical significance (Simmons et al, 1985)

Harbord et al (1987) interviewed children with cystic fibrosis in three age groups, 4-6 years, 7-11 years and 12-18 years. When considering attitudes to the disease, the authors found that the 7-11 year olds were significantly less likely than the other two groups to say they felt better after any intervention, nor to report any positive aspect of having cystic fibrosis. Harbord et al concluded that their results provide evidence of attitudinal change associated with age or stage of development.

Cowen et al (1984) compared the effects of age on emotional disturbance in a sample of young people with cystic fibrosis. The emotional scale from the Cornell Medical Index and the Tennessee Self Concept Scale were administered. The older group (20 years and older) had a greater level of emotional disturbance than the younger group (16-19 years). On the measure of self concept the younger group displayed self-concept profiles similar to age-related norms indicating reasonably good self-concept. The older group however showed more negative self-concept with particularly low scores related to physical self-concept and particularly high scores on psychosis items.
Nonetheless, the results did not reach psychopathological levels, falling at the top end of the normal range.

Within a cognitive developmental framework a child progresses from a stage of pre-logical cognitive thought, to concrete logical thought and finally to formal logical thought. The majority of the cystic fibrosis research provides evidence for increasing emotional distress in relation to the progression of cognitive development. This may reflect an increased capacity to understand the nature of cystic fibrosis and its implications. Added to this is the concept of the developmental course of the disease. Cystic fibrosis is a fluctuating condition, however it is also progressive and results in premature death. As a child grows older so the disease progresses. Reaching adolescence and early adulthood may signify increased awareness of their poor prognosis (median life expectancy is recently noted as mid twenties (Fitzsimmons, 1990)). Given their level of cognitive development, adolescents and young adults will have the capacity to fully consider the personal implications of that prognosis. Thus the interaction between the child’s cognitive development and the degenerative progression of the disease may partly account for the reported increase in emotional distress across the child’s life span.

**Gender.**

Few studies have directly addressed gender as a possible mediating factor for differential levels of psychological adjustment or pathology. Nonetheless there are particular issues which make gender an important variable to be considered. Not least the difference in life expectancy between males and females (Corey, 1980). The physical maturation of girls differs to that of boys at puberty. Boys experience a vast increase in chest capacity as their shoulders broaden and their chest deepens. The female physique does not undergo a two-fold expansion in chest capacity and therefore girls have a smaller maximum lung capacity. These physical changes occurring at puberty coincide with cognitive maturation. It could be hypothesised that girls may be
more aware of shortened life expectancy than their male counterparts and therefore be at greater risk of heightened emotional distress.

Cowen et al (1984) observed higher rates of emotional disturbance in young women than in young men. In the 16-19 year old group, 30% of women showed moderate to severe distress compared to 12% of men. In the 20 years and older group the rates were 59% and 22% respectively. The authors note that this reflects the gender patterns of self-reported emotional distress in general populations which may illustrate a cultural artefact of women’s increased tendency to acknowledge and report symptoms related to body, mood and feelings (Abramson et al, 1966). However within a cystic fibrosis population it is possible that these results may be partly accounted for by different degrees of psychological adjustment to the disease. Simmons et al (1985) suggest that men are better able to integrate their illness into their self-perception which offers them more protection against emotional distress. Other writers (Aspin, 1995) interpret the lower psychological disturbance in men as an indication of increased denial or avoidance of illness, one of two proposed illness defence strategies (Suls & Fletcher, 1995).

Further research into gender effects on psychological distress in individuals with cystic fibrosis is warranted.

**Illness Severity.**

With the study of any chronic illness, the effects of illness severity on psychological adjustment is essential. Illness severity in cystic fibrosis is generally comprised of measures of lung function and measures of weight for height. The Schwachmann-Kulczycki index is a composite measure taking general activity, physical findings, nutritional status and appearance of chest X-ray into account (Kulczycki, 1958). There are a small number of studies which have found illness severity to be a predictor of psychological status (Steinhauser & Schindler, 1981; Boyle et al, 1976). However, there appears to be a great deal more research which has not found illness severity to
be related to psychological adjustment or emotional distress (Brown, Rowley & Helms, 1994; Blair, Cull & Freeman, 1994; Holroyd & Guthrie, 1986; Cowens et al, 1984). Indeed Blair et al (1994) assessed (using GHQ self-report and clinician rated DSM III-R criteria for major depressive disorder) only one of five individuals whose physical status was so severe to warrant being on the lung transplant list, as being emotionally distressed.

**Illness perceptions and beliefs.**

Within the field of health psychology, much work has been dedicated to the study of illness perceptions, beliefs and attitudes. Certain parallels can be drawn between the experience of ageing and the experience of cystic fibrosis as they both involve progressive decline in physical well-being. Studies of older adults (Prohaska et al, 1987) have found a reduction in emotional distress to be associated with beliefs about symptoms being within anticipated experience (as measured by the attribution of symptoms to ageing). It is possible that similar belief systems serve to reduce emotional distress in individuals with cystic fibrosis.

In general populations body awareness has also been found to predict future psychological distress (Hansell & Mechanic, 1991). Again in samples of older adults, increased body awareness was associated with longitudinal reduction in self-assessed health status and resultant psychological distress. Additionally, psychological distress was found to be an antecedent of body awareness. The fluctuating nature of cystic fibrosis requires a high degree of symptom vigilance and body awareness. As individuals get older they become more responsible for the management of their condition. It could be hypothesised that this necessarily high degree of body awareness may serve as a risk factor for psychological distress in older (cognitively mature) individuals with cystic fibrosis. Research into a possible relationship between body awareness and psychological distress in cystic fibrosis populations would be valuable.
A third factor related to illness cognitions and perceptions is self-categorisation. Within social psychology self-categorisation theory (Turner et al 1987) posits that the "self" is not a unitary concept and that an individual’s social identity will vary according to different social contexts. For example the same individual may consider herself a mother at home, a psychologist in the clinic, a pop fan at a concert. Moreover, the individual thinks and acts according to the beliefs and standards which define whichever identity is salient within a particular context. As different identities change so too will the perceptions, beliefs and behaviour of the individual.

Levine & Reicher (1996) relate this to the perception and evaluation of symptoms. They studied a sample of healthy male and female PE students. Using hypothetical scenarios of illness and injury they found that the same symptoms were rated differently and as more or less concerning according to which social identity was salient.

Individuals with cystic fibrosis will have numerous social identities and similar cognitive processes may occur which influence their perceptions of their symptoms and the degree of concern aroused. Research applying a self-categorisation model and the impact on meanings attributed to the experience of cystic fibrosis would be interesting.

Family functioning.

The above factors are all at an individual level. Clearly cystic fibrosis affects the entire family. Many authors suggest that family functioning (the psychological and social processes within the family) can influence physical outcomes in cystic fibrosis (Aspin, 1995; Blair et al, 1994; Cowen et al, 1984;). Based on the more general work of Wood (1994) and on systems theory, Wilson et al (1996) propose a homeostatic model of family functioning. The model comprises three interacting systems: child’s physical health, their psychological status and family environment. Hypothetical interactions begin when pulmonary exacerbation and gradual disease progression trigger adaptive family responses. In turn, these responses foster improvements in the child’s psychological and physical well-being. A relationship between psychological and physical well-being such as that asserted by Lask & Fosson (1989) is assumed. In line
with the findings of Blair et al (1994) the model posits that families who have been coping with cystic fibrosis will have adapted to this increase in stress by improving cohesion, organisation, control, expressiveness and by developing effective coping strategies and problem solving skills.

In a longitudinal study to test their model, Wilson et al (1996) found that families did respond in a highly adaptive way to illness related stressors which served to protect the child from psychological disturbance and to promote better physical well-being. However, families who experienced exogenous stressors (non-illness related life events such as moving house, changing schools, losing friends) demonstrated deteriorated family functioning (as measured by Family Environment Scale, Moos et al, 1974). The children of these families reported significantly more depressive symptomatology (on the Children’s Depression Inventory, Kovacs, 1985) and had significantly lower physical status than children in families which had not experienced exogenous stressors.

The model illustrates the dynamic interactions between the child’s physical health status, family behaviour and the child’s psychological status. Illness related stressors result in homeostatic adaptations characterised by stronger families with children with high self-esteem and low depression levels. This homeostasis is in marked contrast to the experience of external stressors which can compromise a family’s ability to cope. Family functioning is clearly a mediating factor for psychological adjustment of children with cystic fibrosis.

Conclusions.

Within the literature, there is evidence which indicates that stage of development, gender, illness perceptions and beliefs and family functioning have a greater mediating effect on emotional distress and psychological adjustment to cystic fibrosis than illness severity alone. Some considerations of the methodological limitations of much of the research is necessary. Firstly, sample numbers are often small, however the cystic
fibrosis population is growing as improvements in care are made and life expectancy increases. This is particularly relevant for studies of adolescents and young adults. Allied to this point is the often wide age range included within single groups. This disregards any developmental perspective which is crucial to take into account in any study of children and childhood (Eiser, 1993). Secondly, although this has improved in later work, some studies remain poorly controlled. Thirdly, the majority of studies use only self-report measures with no validation from clinician ratings or observational data. Some instruments which are designed to assess mood disturbance in general populations include somatic, cognitive and behavioural items relating to physical illness. This is often inappropriate for use with chronically ill populations as it can commonly result in false-positive misclassifications.

Future research needs to take into account these methodological considerations. In addition more theoretically driven work is needed to further examine the mediating qualities of all of the above factors on the psychological adjustment of young people with cystic fibrosis.

**Clinical relevance.**

Understanding the factors and mechanisms which may mediate against psychological distress and adjustment has unquestionable clinical relevance. Firstly, psychological adjustment and family functioning has been associated with treatment compliance (Koocher et al, 1990). Some researchers report that cystic fibrosis patients are the most compliant of patients with chronic illness (Zeltzer et al, 1980) which could be due to the fact that they are rarely asymptomatic and so suffer the immediate consequences of non-compliance. Nonetheless, a variability in level of compliance is noted in different groups of cystic fibrosis patients with adolescents and young adults being rated as least compliant (Czajowski & Koocher, 1987; D’Angelo et al, 1992; Schultz and Muser, 1992). As seen above, this is the time in the lifespan when levels of emotional distress and psychological disturbance in cystic fibrosis populations tends to be highest. Geiss et al (1992) found a relationship between high levels of physician rated compliance and
poorer marital relationships and fewer maternal social contacts. They interpreted these results as indicating an imbalance of compliance with treatment with psychosocial adaptation to the disease.

Secondly, knowledge about likely mediating factors to the experience of psychological distress in cystic fibrosis enables clinicians to consider the quality of an individual's life. Healthcare providers have an ethical obligation to promote quality of life. It is not acceptable to increase life expectancy if quality of life can not be maintained. Greater consideration of the factors which mediate emotional well-being will facilitate promotion of the psychological factors inherent to quality of life.

Thirdly, an understanding of the mediating factors to psychological adjustment promotes effective intervention for psychological well-being. Awareness of possible factors which may predispose an individual to emotional distress will enable a swifter response to psychological needs and may promote the use of preventative intervention measures. Much research suggests that the increased stress experienced by individuals with cystic fibrosis and their families does not necessarily translate into increased incidence of psychopathology in this population. Although there is limited evidence for increased psychopathology, it seems appropriate to consider these individuals and families as having increased emotional needs. Understanding factors which affect emotional distress will enable a more reactive and flexible response when psychological intervention is required to meet the increased emotional needs of individuals with cystic fibrosis and their families.
References.


CLINICAL CHAPTER
CORE PLACEMENT 1:

ADULT MENTAL HEALTH

Placement Dates:
From 14 October 1994
To 5 May 1995

Placement Supervisor:
William Reavley
Paul Devonshire

Placement Location(s):
Clinical Psychology Department
Graylingwell Hospital
College Lane
Chichester
LOCATION: Chichester Priority Care Services NHS Trust.

TRAINEE: Kirsty Grieve

PLACEMENT SUPERVISOR: Mr. W. Reavley

ADDITIONAL SUPERVISORS: Mrs. F. Will, Mr. P. Devonshire

REGIONAL CLINICAL TUTOR: Catherine Dooley

AGENCY DESCRIPTION: Chichester Priority Care Services is a Mental Health and Community Service under the auspices of the NHS Trust. It provides help for people with mental health problems, including inpatient, day patient and outpatient care, from a variety of hospital and community settings. The service is staffed by a range of professionals including psychologists, psychiatrists, psychiatric nurses, occupational therapists, physiotherapists, and social workers. Areas of mental health dealt with by the psychology department include Child and Adolescent Mental Health, Adult Mental Health, Mental Health of the Elderly, Learning Disabilities, Rehabilitation, Pain Management and Alcohol and Substance Abuse.

CONDITIONS OF PLACEMENT

1. The trainee will work within the Trust for 85 days (including annual leave) over a six month period. The trainee will be based at Graylingwell Hospital.

2. Two hours each week will be allocated to supervision in order to review progress of current activities and reflect on issues arising. (As per Minimum Standards, Appdx 23, Clinical Placement Handbook). Supervision will include presentation of patients, tape recordings of clinical sessions and pre and post discussions with supervisors.

3. One session per week to be allocated to trainee’s private study.

AIMS OF PLACEMENT

a. To provide trainee with experience of the full range of clients referred to adult services.

b. To expose trainee to a wide variety of service settings.

c. To enable trainee to gain experience of using the theory and methods of cognitive-behavioural psychotherapy to work with adult patients and their problems.

d. To enable trainee to develop a level of clinical skills and competence consistent with this stage of training.
CLINICAL EXPERIENCE

Experience will be gained along a continuum as follows:
   as an observer;
   a participant in assessment and therapy;
   contributing to ongoing therapy;
   by seeing "screened" clients;
   by seeing clients independently.

1. Range of presenting problems
The trainee should gain experience of independent client work in the following problem areas:
   - Anxiety
   - Depression
   - Obsessive compulsive disorders
   - Eating Disorders
   - Adjustment and adaption difficulties/Bereavement

It would be desirable for the trainee to gain experience of working with clients with the following presenting problems, either through observation or independent client work:
   - Sleep Disorders
   - Health/Somatic difficulties
   - Problems of emotional control and adjustment, social skills and assertiveness, suicide and parasuicide and personality disorder.
   - Survivors of sexual abuse
   - Sexual and relationship problems/family problems
   - Disability
   - Substance Misuse

The trainee should spend up to one session per week working in the area of Acute Psychotic Disorders/Longer Term Mental Health Problems/Rehab and Continuing Care. Experience would include visiting the ward, attending ward rounds, observing assessment approaches of psychologists and other professionals. It is desirable for the trainee to carry out direct client work in this area, possibly involving assessment and psychological intervention.

The trainee will observe the supervisor providing a program of longer term treatment to a client.

2. Range of clients
The trainee should gain experience of working with the full range of clients referred to adult services.
   i) Age - The trainee will see clients across the age span, covering late adolescence and young adulthood, middle and later ages up to 65.

   ii) Sex - The trainee will see an appropriate mix of male and female clients.

   iii) Ethnic background - Where possible, the trainee will have some level of clinical contact with at least one client from a different ethnic and/or cultural background.
3. Neuropsychology and psychometric assessment
The trainee will gain experience of using psychometric assessment through observation of a qualified psychologist and independent client assessment. This will include a WAIS-R, Weschler Memory Scale and other relevant tests.

4. Structure of therapy and intervention
i) Individual therapy work - The trainee will gain direct experience of individual client work.

ii) Therapy work with couples and/or families - The trainee will gain indirect experience of this type of therapy through observation of qualified clinicians.

iii) Group therapy work - The trainee will gain direct experience of group work through co-facilitating a therapy group with a qualified clinician.

5. Settings
The trainee should gain experience of working in as wide a range of settings as possible, for example:
- Psychology Department and outpatients clinics
- Community Mental Health Teams and Resource Centres
- Primary Care Settings
- Day Centres
- Hostels and Group Homes
- Inpatient wards (acute long stay and rehabilitation)
- Clients' homes

The range of settings should include other agency facilities.

OTHER EXPERIENCES
1. The trainee will write psychological reports, case notes and letters as required.

2. The trainee will keep administrative records consistent with the requirements of the department.

3. The trainee will attend and participate in departmental meetings as well as meetings and other professional development activities appropriate to the placement.

4. The trainee will keep a record of experiences gained in the placement.

5. If possible, the trainee will be involved in teaching or training.

REVIEW
Meetings between the trainee, the placement supervisor and the Regional Clinical Tutor at the middle and end of the placement will be used to review the trainee's progress towards achieving goals and to renegotiate the contract if required.

K.A.Grieve

W.Reavley
CORE PLACEMENT 2:

LEARNING DISABILITIES

Placement Dates:
From 18 May 1995
To 17 November 1995

Placement Supervisor:
Zillah Webb
Alison Lane

Placement Location(s):
Department of Psychology
Cavel House, St Ebba’s Hospital
Surrey Heartlands NHS Trust
Hook Road
Epsom
CONTRACT FOR PLACEMENT FOR EXPERIENCE WITH PEOPLE WITH
LEARNING DISABILITIES FOR THE UNIVERSITY OF SURREY
DOCTORATE IN CLINICAL PSYCHOLOGY.

LENGTH OF PLACEMENT: 18.5.95 - 16.11.95

NAME OF TRAINEE: KIRSTY GRIEVE.

NAME OF CO-SUPERVISORS: ZILLAH WEBB AND ALISON LANE.

ADDRESS: CAVELL HOUSE, ST EBBA'S, SURREY HEARTLANDS NHS TRUST,
HOOK ROAD, EPSOM, SURREY KT19 8QI.
(01372 722212 EXT 4063)

AIMS OF PLACEMENT:
1. To achieve at least an acceptable standard in the core competencies as applied to clients with a learning disability as specified in the Clinical Placement Handbook.
2. To introduce the trainee to this client group and give experience with a full range of disabilities in both community and hospital settings.
3. To develop awareness of their needs.
4. To have experience of the range of possible psychological assessments, therapeutic interventions and theoretical models, including systematic and psychodynamic.
5. To gain experience or knowledge of alternative therapies, e.g. multi-sensory environment, aroma therapy, music and drama therapy.
6. To gain awareness of broader systemic and service issues.
7. To identify areas of special interest and provide sample experience of those areas.
8. To carry out a piece of service related research.

OBJECTIVES:
1. To select, use and interpret norm referenced and criterion reference tests.
2. To enable the trainee to communicate effectively with learning disabled clients using modified language and non-verbal methods, including a Makaton refresher.
3. To plan and undertake at least part of therapeutic interventions, one behavioural and one other orientation.
4. To plan, run and evaluate a group.
5. To communicate the formulation method and outcome of an intervention in writing.
6. To present a psychological assessment and/or intervention to a multidisciplinary group.

7. To observe the work of other professionals in the multidisciplinary team and to gain understanding of the inter-relationship.

**METHODS.**

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<th>TASK</th>
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<tr>
<td>To attend meetings of the Psychology Department held on alternate weeks.</td>
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<td>To attend meetings of the CTLD held on alternate weeks for first half of placement and then to attend once a month.</td>
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<td>To attend CTLD team training day.</td>
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<td>To attend a SIG (PLD) meeting.</td>
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<td>To present a case report to a multidisciplinary group.</td>
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<td>To give a seminar to the department.</td>
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<td>To work a shift on a home as part of a specific assessment of a client using an observation schedule.</td>
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<td>To apply a WAIS-R, Leiter and BPVS.</td>
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<td>To carry out at least one in-depth psychometric assessment.</td>
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<td>To apply and interpret clinically the HALO, Berewecke or BAB.</td>
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<td>To design and evaluate a behavioural programme including a functional analysis.</td>
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<td>To work directly 1:1 with a minimum of 2 clients with involvement in at least 10 others in all including one person with a mental health problem, and to provide a detailed formulation and report on two of these clients.</td>
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<td>To participate in focused group work with another psychologist or undertake similar joint work.</td>
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<td>To observe the work of another psychologist in assessment and therapy sessions.</td>
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<tr>
<td>To participate in staff training session.</td>
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<td>To communicate results of psychological assessments with staff carers in a residential setting.</td>
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<td>To do the same with parent carers in a community setting.</td>
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<tr>
<td>To observe the work of other professionals in NHS, Social Services and educational settings.</td>
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</table>
To spend half a day in clinical reading once a week.

To attend a meeting in which service development or organisational change issues are discussed.

To endeavour to cover the following areas - sexuality, bereavement/loss, skills teaching, social skills, challenging behaviour and cross-specialism, ethical issues, life cycle and stages of development...

PARAMETERS OF THE PLACEMENT.

Supervision minimum for 1½ hours per week, both supervisors to be present together with trainee whenever possible plus at least ½ hour informal supervision during week.

Informal lunch break with both supervisor and trainee once a week.

Annual leave arrangements to be negotiated in the early stage of the placement within the limits set by the course requirements.

AGENDA FOR SUPERVISION:

1. Ongoing case work.

2. General issues arising, process issues, policy, alternative therapeutic approaches, including drawing on supervisors caseloads.

3. Contract: Objectives. Still to cover, goal setting.

   Personal development - learning styles, theoretical orientation.
   Making links to other client groups.

STATEMENT OF EXPECTATIONS:

DRESS: to reflect activities for each day as timetabled "smart casual" should be appropriate for most occasions, but for some activities more informal clothes will be more practical - if in doubt - ask.

SECURITY: observing the departmental procedures meticulously is extremely important due to the high number of break-ins. We shall be reminding each other of these and possibly revising them at intervals throughout the placement.

ALISON LANE
Chartered Clinical Psychologist

MAY 1995.
CORE PLACEMENT 3:

CHILD, ADOLESCENT AND FAMILY

Placement Dates:

From 6 December 1995
To 26 April 1996

Placement Supervisor:

Sophie Gosling

Placement Location(s):

Leon Gillis Children’s Unit
Queen Mary’s University Hospital
Roehampton
PSYCH D IN CLINICAL PSYCHOLOGY
CHILD, ADOLESCENT & FAMILY CORE PLACEMENT

TRAINEE PLACEMENT CONTRACT

TRAINEE NAME: Kirsty Grieve
SUPERVISOR NAME: Sophie Gosling
PLACEMENT BASE: Leon Gillis Children's Centre
                Queen Mary's University Hospital
                Roehampton.
PLACEMENT DATES: 22 November '95 to 19 April '96.

AIMS OF PLACEMENT:

i) To enable trainee to develop a level of clinical skills and competence consistent with this stage of training.

ii) To introduce trainee to the full range of clients referred to the Clinical Psychology Service for Children and Families and to raise awareness of their needs.

iii) To enable trainee to gain experience of the range of possible psychological assessments, therapeutic interventions and theoretical models used in working with children and families.

iv) To enable trainee to develop experience of working within a range of service settings.

v) To enable trainee to develop awareness of broader systemic and service-related issues.

CLINICAL EXPERIENCE

Experience will be gained in the following ways:

as an observer;
as an participant in joint assessment and therapy;
by seeing clients independently;
through discussion about supervisors ongoing casework.
CLIENT WORK

i) Range of clients. As far as possible, the trainee will gain experience with the range of clients outlined in the Core Placement in Child and Adolescents Placement Guidelines (2nd draft, Oct'94). Appendix 1.

ii) Range of presenting needs/problems. As far as possible, the trainee will gain experience with the range of clients outlined in the Core Placement in Child and Adolescents Placement Guidelines (2nd draft, Oct'94). Appx 1.

iii) Number of clients. The trainee will take on 8 to 10 independent cases. A proportion of these may be assessments which do not lead to treatment. The trainee will co-facilitate a group.

iv) Neuropsychological and cognitive assessment. The trainee will carry out at least one in depth assessment.

ADDITIONAL CONSIDERATIONS:

i) The trainee will keep administrative records consistent with the requirements of the department.

ii) The trainee will attend and participate in departmental and specialty meetings as well as other professional development activities appropriate to the placement.

iii) The guidelines for Minimum Standards on placement (Appx 2) will be taken into consideration and will be provided as far as is possible.

iv) The equivalent of one session per week is to be safeguarded by the trainee for clinical reading.

Sophie Gosling
Kirsty Grieve
Trainee
Supervisor
INTRODUCTION

The Client Group

Children - principally in age range 0-16 with the flexibility to include premature neonates and 16+ as the transition from childhood to adulthood is not a clear one. Some of the legal rights of adults are conferred at age 16, others are reserved until age 18, while young people in special education may continue until the age of 19. The majority of services take the cut off as being leaving full-time education unless there is a specific service for adolescents.

Children and adolescents are developing and changing all the time and what is normal at one age may be a serious problem in an older or younger child. The foundation of working with this client group is a sound knowledge of normal development and behaviour of children in the context of home, school and peer groups. The range of problems which may be experienced is large and difficult to categorise.

The client group should include;

- Children whose development is progressing normally and who come into contact with services only because some aspect of their behaviour presents a management problem for their families, eg sleep problems, or temper tantrums.

- Children whose development is not progressing normally because of physical or intellectual delay/impairment, or chronic adverse social circumstances. These children may have long term contact with a large network of services.

- Children with educational, emotional and conduct problems which range from mild to severe and who may be in contact with a range of services.

- Children who have been diagnosed as having psychiatric illness such as Anorexia Nervosa, Obsessive Compulsive Disorder, Psychotic Disturbance etc. etc. Some of these children may be receiving help in residential services.

- Children who have been victims of physical and sexual abuse or who are beyond parental control and may be living at home, in foster care or in childrens' homes.

A major feature of work with this client group is the need to develop skills for dealing with the network that surrounds the child. At its simplest this may be the family and school. At its most complex it may include nuclear and extended family, School, Education Office, Social Services, Paediatricians, and Child Development Team etc. Consequently the psychologist needs the skills to interact with people of all ages from baby to grandmother and professionals from a wide range of statutory and voluntary agencies.
Settings

The trainee will carry out work in as wide a range of settings as is possible given that the range available will vary in different departments. Some areas that they should aim to work in would be special needs units, nursery settings, inpatient child and adolescent wards, schools, social service run centres and community.

Client work

The trainee will have direct experience with the problem areas described below.

a) Child Protection following abuse, high risk families, preventative work (to a limited degree).

b) Child Development challenging behaviours, anxieties and phobias, autistic spectrum disorders, family adjustment, separation and parenting issues.

c) Under 8s sleep, enuresis, encopresis, conduct disorders, attention deficit and hyperkinetic disorders, eating disorders.

d) Health related problems such as asthma excema, headache, pain, ME.

e) School Based Problems bullying, social anxieties, school refusal, peer relationship.

f) Post trauma eg, head injury, rehab, Post Traumatic Stress Disorder, bereavement, problems around divorce of parents.

g) Adolescent Presentations eg, anxiety, depression, attempted suicide, eating disorder, obsessive compulsive disorder, family breakdown, reconstituted families, substance misuse, social skills.

h) Specialist areas (limited involvement) Paediatrics, Special needs provision, Child Neuropsychology.

Number of clients

The trainee will see a number of clients during observation of the supervisor and will also undertake a number of assessments that may not lead to treatment. The aim should be that the trainee takes on approximately 10 independent treatment cases. In addition it is hoped that the trainee will be involved in a group.

Trainees will be seeing clients over different age ranges, with a range of different problems and of different levels of severity. It will be impossible to predict exactly what might be available in terms of covering the whole list of areas; however, the aim should be that they see at least one child from each age range - pre-school, mid-childhood and adolescence.

Placement Guidelines

The following outlines what is seen to be good quality placement experience and skill development for trainees during their course. Experience is either categorised as essential or desirable depending on its level of importance. When a skill is described it is assumed that the level will be reached by the end of the placement.
MINIMUM STANDARDS

(N.B. This should be read in conjunction with B.P.S. Guidelines on Clinical Supervision)

1. TRAINEE OFFICE ACCOMMODATION. It is expected that the trainee has their own desk for the time needed on placement, within a shared office and with some lockable storage space.

2. CLIENT ROOMS It is expected that the supervisor arranges for appropriate rooms to be available for regular client appointments at the start of the placement as part of setting up the placement structure.

3. SECRETARIAL SUPPORT It is expected that the trainee will have an identified secretary and will have the same priority in terms of access and response times as for a Grade A staff psychologist for client work and department work.

4. SUPERVISION TIME It is expected that the minimum is one and a half hours 1:1 contact per week with additional informal contact. The minimum is two hours for first core placements. It is expected that supervision time will be regular in normal circumstances.

5. CONTRACT It is expected all trainees will have a typed contract at the beginning of the placement; that this will incorporate the trainee's individual interests and needs; that it will identify skills and competencies to be developed as well as describing placement experience.

6. CLIENT WORK It is expected that the trainee will have direct or indirect exposure to therapy work with a client from a different ethnic or cultural background.
CORE PLACEMENT 4:

OLDER ADULTS

Placement Dates:

From 2 May 1996
To 11 October 1996

Placement Supervisor:

Kate Anderson

Placement Location(s):

Department of Clinical Psychology
Delancey Hospital
Charlton Lane
Cheltenham
Glos.
PLACEMENT AIMS

Kirsty Grieve
Psych D. Clinical Psychology

Older Adults Placement - 3 May 1996 to 11 October 1996

Supervisor: Kate Anderson
East Gloucestershire NHS Trust
01242 272000

General Aim

To enable Kirsty to feel confident and competent in the various aspects of work with this care group, including assessment, treatment, training and service provision.

At the end of the placement it is the aim that Kirsty will have learned much, enjoyed her work, and will be aware of and appreciate the role the Clinical Psychologist can play in later life. She should also be able to acknowledge future personal and professional developmental needs within the specialty.

This will be provided by a continuum of learning experiences, beginning with shadowing and mutual observation, leading to independent practice. Observation of supervisor/trainee will occur throughout the placement.

Clinical Activities

To carry a caseload drawn from psychiatry and physical health in old age which reflects current practice, eg, adapting to loss/change, anxiety, depression, carers issues.

To have experience of severe and persistent mental illness in the older adult.

To observe and carry out the following assessments and to feel competent about their use and appropriate feedback:-

MMST, CAPE, MEAMS, KENDRICK, NART, SCHOWELL, WAIS-R, WMS, Rivermead Severe Impairment Battery, Memory Clinic Assessment, HADS.

To acknowledge alternative approaches and be aware of the demands assessment and therapy place on patients and to make appropriate alterations.

To join with the supervisor in various activities and adventures.

Teaching

To join in or set up appropriate teaching on placement.

Administrative Activities

To maintain quality standards as laid down by the specialism.

To attend appropriate department and MDT meetings.

To complete Körner and appropriate bureaucracy in a timely fashion

Supervision

As per the Supervision Contract
SUPERVISION CONTRACT

Older Adults, May 1996 - October 1996

Supervisor: Kate Anderson
Supervisee: Kirsty Grieve

Frequency and Duration

Supervision will take place from 9am until 11am on a Thursday. Another time will be arranged when this arrangement is not possible.

Style of Supervision

Supervision sessions will address three areas - client issues, professional issues and personal issues.

Some sessions will involve the use of audio or video taped clinical material.

Supervisee's Responsibilities

1. To identify issues with which help is required.
2. To be able to share freely and be open to feedback.
3. To discriminate what kind of feedback is most useful and to share this information with the supervisor.
4. To review regularly with the supervisor the overall progress of the placement.

Supervisor's Responsibilities

1. Primarily to ensure a rich, rewarding, honest placement, with some fun too!
2. To discuss and set appropriate goals for placement with continuous review.
3. To promote the two-way process and to help supervisee clarify objectives when working with patients.
4. To comment appropriately on clinical work, both written and verbal.
5. To offer and encourage appropriate reading and resource material.
6. To facilitate supervisee's ability to gain personal insight and to assess their own work.
7 To encourage supervisee to conceptualise patient issues in alternative ways and from different perspectives.

8 To give feedback as appropriate as to what supervisee is like to supervise.

9 To be available upon request for additional supervision if required.

**Overall Goals of Supervision**

To facilitate the learning of the core clinical skills required to practise as a Clinical Psychologist with Older Adults in a wide variety of settings.

For supervisee to feel honestly appraised in a non-threatening environment.
SPECIALIST PLACEMENT 1:

NEUROPSYCHOLOGY

Placement Dates:
From 23 October 1996
To 4 April 1997

Placement Supervisor:
Annette Schwartz

Placement Location(s):
Department of Clinical Neuropsychology
Atkinson Morley's Hospital
Copse Hill
Wimbledon
London SW20 0NE
<table>
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<th>Annette Schwaerzler</th>
<th>Department</th>
<th>Clinical Neuropsychology</th>
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<td>Trainee</td>
<td>Kirsty Snow</td>
<td>Department Address</td>
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*Note: The table entries are marked with ✓ indicating a positive result and blank entries indicate no result.*
SPECIALIST PLACEMENT 2:

CHILD HEALTH

Placement Dates:

From 23 May 1997
To 27 September 1997

Placement Supervisor:

Frances Goodhart

Placement Location(s):

Child and Adolescent Psychology
Cotswold House
Sutton Hospital
Sutton SM5 2NF
CHILD & ADOLESCENT PAEDIATRIC SPECIALIST PLACEMENT
PLACEMENT CONTRACT

Trainee: Kirsty Grieve
Supervisor: Frances Goodhart
Placement: Child Health - Specialist Placement
Base: Child Psychology Department, Cotswold House
Sutton Hospital, St Helier NHS Trust
Queen Mary’s Hospital for Children
Placement dates: 23/4/97 - 27/9/97

Aims

To provide trainee with experience of working within Child Health Services. To enable trainee to develop understanding of the relationship between physical health and psychological well-being. To provide experience of the role of psychology in all aspects of paediatric health care + childhood chronic illness in particular.

To enable trainee to develop an understanding of the roles of different professionals and service networks within this field and how the role of clinical psychology fits with these other professionals.

To provide the opportunity for trainee to develop systemic thinking, taking account of child’s developmental stage, family issues and involvement of wider service networks.

To enable trainee to consolidate behavioural, cognitive and cognitive/behavioural techniques in work with children and families.

Methods

Trainee will see range of children and adolescents at various stages of development with different physical health problems and a range of psychological needs.

Trainee will work with individual children and families.

Trainee will meet and observe other professionals and if possible will undertake a piece of multi-disciplinary work.

As well as undertaking individual therapeutic work, trainee and supervisor will work flexibly enabling trainee to benefit from mutual observation and co-therapeutic work of more complex cases.

Additional specific goals

It is hoped trainee will be able to carry out a neuropsychological assessment.
It is hoped trainee will be able to undertake some organisational or consultative work.

It is hoped trainee will undertake at least one piece of teaching/presentation work.

**Expectations**

Trainee will work as a member of Child Psychology Department, attending specialty and departmental meetings and carrying out all administrative duties required.

Trainee will receive regular supervision of 1 1/2 hours per week. The equivalent of 1 session of clinical study time can be flexibly taken during the clinical week.

Frances Goodhart  
Kirsty Grieve
CASE REPORT SUMMARY 1:
ADULT MENTAL HEALTH

A BEHAVIOURAL INTERVENTION FOR NEEDLE PHOBIA

All identifying information has been removed. All names are fictitious.
Case Report Summary: A behavioural intervention for needle phobia.

Ms L. was referred to the Psychology Service by her GP due to her extreme fear of needles. Her fear was long-standing and had led her to avoid all injections and blood tests since the age of thirteen. Ms L's fear had a number of implications for her life. She was concerned about not having had childhood immunisations. She also wanted to start a family but had not felt able to cope with the routine blood tests and medical check ups required during pregnancy.

Three aspects of Ms L's fear suggested it was a phobia: its intensity, her ability to recognise that her fear was excessive, and her extensive avoidant behaviour. Ms L's presenting problems were formulated within a learning theory framework. It was suggested that her fear had developed as a result of associating injections and needles with two particularly traumatic experiences of injections during childhood. It was hypothesised that avoidance was a key factor maintaining Ms L's fear as avoidance of feared situations did not provide the opportunity for Ms L to become habituated to the feared stimuli.

A behavioural intervention programme was developed employing graded exposure to hierarchical fears. Of particular importance during intervention was graded given Ms L's long-standing avoidance and her resultant low levels of self-efficacy. Prior to exposure to needles and feared items from the hierarchy, applied tension techniques were introduced to reduce the likelihood of Ms L fainting in response to a drop in blood pressure when exposed to blood. To prevent therapist from becoming a discriminant stimulus, Ms L carried out tasks at home including injecting fruit, watching videos of blood being taken and injections given. Intervention lasted 12 sessions during which time ms L worked successfully through her hierarchy of feared events. At the end of intervention she had been immunised against tetanus and had had blood taken voluntarily for the first time in over 20 years. It was recognised that continued exposure and practise would be necessary to enable Ms L to maintain the progress she had achieved.
CASE REPORT SUMMARY 2:
LEARNING DISABILITIES

AN ASSESSMENT OF NEEDS TO GUIDE SERVICE DELIVERY

All identifying information has been removed. All names are fictitious.
Case Report Summary: An assessment of needs to guide service provision.

Ms W was referred to the Learning Disability Service for bereavement counselling. Due to case managing restrictions, an assessment of need had to be carried out to establish Ms W's needs and to establish which Service (Learning Disability or Adult Psychiatry) was most appropriate to meet those needs.

Information was gathered from case notes, previous assessments, discussions with Ms W., the HALO (Hampshire Assessment for Living with Others) and the WAIS-R (Wechsler Adult Intelligence Scale-Revised). The WAIS-R was used to assess Ms W's level of general intellectual functioning and to offer an indication of a profile of cognitive strengths and weaknesses. The HALO was used to assess Ms W's living skills and to suggest an appropriate level of residential care placement.

General needs and residential needs were proposed based on information from all sources. It was suggested that Ms W. would receive the most appropriate service from the Learning Disability Service. Recommendations were fed back at multi-agency case discussions, at Section 117/CPA discharge meetings and by written report.

This case highlighted numerous issues regarding service delivery to individuals who are at the borderline of two Service remits. It clearly highlighted the dangers of misinterpretation of IQ scores by other agencies, and the limitations of an individual's ability or need being defined by inappropriately interpreted IQ scores rather than taking into account functional levels of daily living skills and the individual's own wishes. A strong argument is made for not including IQ figures in clinical reports which are to be interpreted by individuals who may not have the qualifications to interpret them.

A Departmental protocol was devised for reporting intellectual functioning and need as a result of this case.
CASE REPORT SUMMARY 3:
CHILD, ADOLESCENT AND FAMILY

SOCIAL LEARNING THEORY INTERVENTION FOR
CHILDHOOD BEHAVIOUR PROBLEMS

All identifying information has been removed. All names are fictitious.
Case Report Summary: Social learning theory intervention for childhood behavioural problems.

James was referred to the Psychology Department following concerns about his behaviour. His parents were finding discipline difficult at home and the nursery were also finding his behaviour difficult to manage.

Information was gathered from parents and nursery staff. Extensive observation at nursery was also carried out. Initial hypotheses suggested that I) the main function of James' behaviour was to gain the attention of others or to elicit a response from others, II) James' behaviour was being reinforced by others responses.

The formulation consisted of three maintaining cycles, the first was common to James' home and nursery, the second and third were exclusive to his home and nursery respectively. Cycle 1 suggested that James was responded to inconsistently. As a result he did not have clear guidelines or boundaries of what was acceptable and unacceptable behaviour. Cycle 2 suggested that James' mother doubted her ability to cope with James. She responded to him in an inconsistent way resulting in an increase in his disruptive behaviour as he sought to find boundaries. This reinforced his mother's beliefs that she could not cope with James. Cycle 3 suggested that nursery staff had labelled James as “naughty” thus all his behaviour was interpreted with a negative bias. Intervention was based on social learning theory and directed at breaking the maintaining cycles. This was achieved by sharing the formulation with James' parents and nursery staff; externalising the problems from James and viewing the behaviour as a result of reciprocal relationships; generating strategies to manage James' behaviour by setting clear limits for James; by reinforcing desirable social behaviours and ignoring undesirable behaviours; manipulating the environment to reduce the likelihood of undesirable behaviours occurring.

Intervention was successful at all levels. Outcome was measured by report from parents and staff and by objective observation at nursery.
CASE REPORT SUMMARY 4:
OLDER ADULTS

A COGNITIVE-BEHAVIOURAL INTERVENTION FOR
FEAR OF PUBLIC TRANSPORT

All identifying information has been removed. All names are fictitious.
Case Report Summary: A cognitive-behavioural intervention for fear of public transport.

Mrs C, a 75 year old woman was referred to the Psychology Department for psychological input for her fear of public transport. A number of presenting psychological difficulties were observed at assessment, including specific transport fears, generalised anxiety and low mood and self-efficacy. Mrs C’s difficulties were long-standing and had undesirable implications for her life including social isolation and loss of independence. Mrs C’s difficulties were formulated within a cognitive behavioural framework and intervention was directed at regaining use of public transport through breaking the maintaining factors of negative cognitions and avoidance. Mrs C was sceptical about the approach and did not believe that she would be able to change as she had not been on a bus in 40 years. When developing the formulation, however she acknowledged that avoidance could maintain anxiety and negative thinking could influence how she was feeling. Graded behavioural tasks were used beginning with easily achievable tasks (such as obtaining a bus timetable, finding the bus stop) to increase self-efficacy and facilitate engagement in intervention. Cognitive work was introduced gradually introduced once Mrs C had experienced some success and once we were ready to begin the bus travel items on the graded hierarchy. As well as overcoming fear of bus travel, it was intended that the intervention would increase Mrs C’s self-efficacy, increase her independence and reduce her social isolation. It was hoped that this would have beneficial effects on her low mood. Outcome was evaluated according to a model proposed by Berger (1996). Mrs C achieved significant clinical change working successfully through her graded hierarchy. Client and referrer rated the intervention as successful. Mrs C was pleased with her progress particularly in view of her initial scepticism about the approach and her initially held beliefs that she would not be able to change. An unforeseen result of the success of the intervention was the impact that Mrs C’s potentially increased independence had on her husband (80 years old). They had always been everywhere together and Mrs C’s increased independence signified a change for both of them which needed to be negotiated.
CASE REPORT SUMMARY: 5

ASSESSMENT OF SUSPECTED BINSWANGER'S DISEASE

All identifying information has been removed. All names are fictitious.
Case Report Summary: Neuropsychological assessment of a man with suspected Binswanger’s Disease.

Mr K was referred for neuropsychological assessment following concerns about possible cognitive decline following a suspected transitory ischaemic attack (T.I.A.). He was 55 years of age when assessed.

Neuropsychological assessment involved clinical interview, review of medical notes and psychometric assessment. Regrettably it was not possible to speak with a relative. Clinical interview was conducted to gather background information. From the information provided it was hypothesised that Mr K was experiencing a global deterioration in cognitive functioning. A number of risk factors for vascular involvement were evident including hypertension, smoking and suspected T.I.A.

Psychometric assessment included assessment of general intellectual functioning, current and premorbid estimate, speed of information processing, memory verbal and nonverbal, language functioning, executive functioning and a measure of mood disturbance. Results provided support for the initial hypothesis that Mr K was experiencing compromised cognitive functioning. Further hypotheses about the possible causes of this decline were discussed including mood disturbance and vascular dementia. A review of Binswanger’s Disease was presented and possible supporting evidence from neuropsychological assessment was discussed. This was integrated with scan and medical investigation results. Issues in future management were considered.
RESEARCH CHAPTER
LITERATURE REVIEW

HEALTH-RELATED ANXIETY IN OLDER ADULTS: A DISCUSSION OF PREDISPOSING AND MEDIATING FACTORS.
Health-related anxiety in older adults: A discussion of predisposing and mediating factors.

Anxiety is a common phenomenon experienced throughout the lifespan. Quoted prevalence rates for anxiety disorders meeting diagnostic criteria in older adults vary greatly, ranging for example from 1.4% (Copeland et al, 1987) to 11.7% (Myers et al, 1984). Examinations of experiences of anxiety, without the stipulation of diagnosed pathology, suggest prevalence rates are increased. For example, Himmelfarb and Murrel (1984) observed prevalence rates of over 20% for anxiety severe enough to warrant therapeutic intervention, in adults 65 years and older. Within clinical contexts some authors argue that this figure may be an underestimation due to hierarchical diagnostic systems whereby diagnosis of one disorder precludes acknowledgement of other concurrent disorders (Frances et al, 1995). Underestimation of anxiety could be further influenced in elderly populations due to older adults’ propensity to report somatic rather than psychological complaints and by possible biases of medical staff when an elderly person presents for consultation (Koenig et al, 1988, Moffic & Paykel, 1975).

A sizeable discrepancy therefore exists between diagnosed anxiety disorders and heightened anxiety experiences within this population. This is possibly a reflection of anxiety which is reactive to the experiences associated with ageing. One such experience associated with the developmental stage of ageing is failing health and increasing physical frailty. This review will address the phenomenon of health-related anxiety within the elderly population. A possible predisposition of older adults to anxiety will be considered from a biopsychosocial framework. This will be related to a possible predisposition to health-related anxiety and literature will be reviewed presenting factors which mediate the realisation of health-related anxiety in older adults. In conclusion, directions for future research are considered.
The Biopsychosocial model of anxiety.

This model takes into account the influence of biological, psychological and social factors upon the experience of anxiety. Within a developmental framework, the biopsychosocial model of anxiety would accommodate relevant changes in those three factors according to in the developmental stage of an individual, or their stage the ageing process.

Examining these three factors which may have a bearing on the likelihood of anxiety, reveals a plethora of experiences common to the elderly. Examples of each of the three factors will be outlined in turn.

**Biological factors.**

It is possible that the changes observed in a normal, ageing brain could disturb the functioning of a neuropsychological model of anxiety possibly increasing the likelihood of the individual experiencing anxiety. For example, substantial neuropsychological changes occur with ageing which, according to Gray (1982) can give rise to physiological and behavioural signs of anxiety whenever a mismatch is perceived between current and expected behaviour at an information processing level.

Many genre of physical presentation are associated with anxiety including neurologic, genitourinary, gastrointestinal, cardiovascular and respiratory (Turnbull, 1989). For example, Kathol et al (1986) describe how 23 out of 29 patients presenting with hyperthyroidism fulfilled diagnostic criteria for generalised anxiety disorder. All of these physical presentations are commonly observed in older adult populations.

Given the above phenomenon, older adults may be at increased risk of experiencing biological factors associated with anxiety.

**Social factors.**

Social factors relate to the relationship of the older person to society and their role and status within the society both at a personal level and a wider societal level. As a group, older adults can be regarded as having limited social roles particularly in an industrial
society in which the extended family is in decline (Kitwood, 1986). Consequently, older adults may have limited social support networks, may be more likely to be poor and live in poorer housing. Such factors have been associated with increased incidence of anxiety and other mental health problems (Rathus & Nevid, 1989)

**Psychological factors.**

Personality traits which are enduring throughout the lifespan are recognised as a factor which can increase the likelihood of anxiety. Personality changes associated with neuropsychological changes in the elderly, could be regarded as an increased risk factor for older adults.

The interpretation of life experiences is another psychological factor relevant to the experience of anxiety. Weinberger et al (1986) through an interview based study, concluded that in a group of older adults, perceptions of life changes as either positive or negative was associated with the corresponding perception of health status. Interpretation of life events as positive showed a slight positive correlation with perceived health status as being positive, whereas negative interpretations of life events were strongly associated with, and predictive of, perceptions of poor health. The phenomenon of worry amongst older adults has also attracted some research interest. Wisocki et al (1986) developed a Worry Scale particularly for the elderly, featuring three main areas of concern, finances, social conditions and health. Findings from the use of the scale indicated health concerns were the most commonly reported; individuals with higher worry scores also reported poorer health, and; those who were more chronically ill had higher worry scores than elderly subjects who were active (Wisocki et al, 1986; Wisocki, 1988).

When taken within a developmental framework, the consideration of factors relevant to a biopsychosocial model of anxiety could lead to the suggestion that older adults are at greater risk of experiencing anxiety disorders and particularly health related anxiety.
Health-related anxiety and older adults.

In a survey of anxiety and depression in middle aged and elderly medical inpatient populations (controlling for psychiatric diagnosis) younger adults were found to display significantly higher levels of anxiety than the older adults (Magni & Deleo, 1984). However, there is contrary evidence which suggests older individuals may have a higher propensity for this specific anxiety than other populations. Research into the phenomenon of worry has indicated that elderly people drawn from a community sample report highest degree of concern associated with health (Wisocki et al, 1986). A further study (Wisocki, 1988) found a positive association between degree of worry and degree of ill-health. However these studies are flawed as data collection was based entirely on self-report (Hersen & Van Hasselt, 1992) thus results could be confounded by shared method variance (Kazdin, 1992). Despite the absence of additional measures to validate self report data, the results still provide information about the relationship between worry, anxiety and health status in older adults.

Given the above findings, and the possible predictions from a biopsychosocial model of anxiety, it could be hypothesised that the common decrease in health status as a function of ageing may represent a risk factor for increased health related anxiety in older adults. However, research findings are evident in the literature which indicate this is not the case.

The next section will turn to research within the area of health psychology in order to examine the possible factors which mediate between the experience of health related anxiety and health status in older adults. Within this context, health-related anxiety is considered as a difficulty which has developed for the first time in later life rather than a condition which developed earlier in life and has endured or re-emerged. Health related anxiety refers to the experience of anxiety reactive both to actual physical health problems and to concerns about possible or future health problems, (Edelmann, 1992).
Models of health related anxiety.

The cognitive model of health anxiety provides a useful formulation for the development and maintenance of health related anxiety and also a framework within which to consider factors which possibly mediate against the realisation of anxiety in this context. The model is based upon the cognitive models of general anxiety proposed by Beck, Emery and Greenberg, (1985) and has been subsequently developed with a more specific focus of health anxiety (Warwick & Salkovskis, 1990).

The model proposes that health anxiety results from a combination of dysfunctional beliefs about illnesses and their consequences and critical incidents such as the experience of symptoms. Beliefs develop as a result of past experience of illness and health in oneself or through vicarious experience of health and illness in others. Dysfunctional or irrational beliefs result in symptoms and body sensations being misinterpreted as indicative of a serious threatening illness. In terms of maintenance, it is assumed that a confirmatory bias in perception results in the selective attention to, and interpretation of information which reinforces the individual's anxiety. This may include over sensitivity to bodily sensations and exaggerated interpretation of these sensations, or an over-vigilance to health related threats (e.g. a heightened tendency to personalise media information about rare illnesses). It may also involve distorted perception of health related communications, for example, selectively perceiving and remembering information from clinician-patient interactions. Reassurance-seeking behaviour may provide a short-term reduction in anxiety, however, individuals may become desensitised to reassurance as their experience of symptoms and negative interpretations of those symptoms continues. This can lead to greater amounts of reassurance being required in order to effect the same reduction in anxiety. At the same time, reassurance-seeking behaviour can be negatively reinforced by the short term reduction in anxiety following the reassurance (Lucock & Morley, 1996). Either way the model suggests implications for health-related behaviour such as presenting to services or engaging in health preventative behaviours.

Warwick and Salkovskis (1990) suggest that the cognitive model can be applicable to individuals along a continuum of severity of health-related anxiety from those who
have a reactive response to actual health problems to those at the extreme hypochondriacal end of the continuum.

Another model of health perception thought to influence health related anxiety and health behaviours is the Health-belief model (e.g. Kirscht, 1983). This model suggests that health practices or behaviours are based on the beliefs or perceptions a person holds at a number of levels. These include the individual’s perception of their vulnerability to the disease; the perceived severity and consequences of the illness if contracted, and; the perceived effectiveness of performing the particular health behaviour. Leventhal et al (1980) developed this model further by proposing that individuals develop a common-sense representation of illness threats which influences their emotional response to the illness and subsequently guides their health related behaviour. Common-sense representations of illness involve consideration of illness identity (symptoms and label), its causes, its course and duration and the consequences for health resulting from the condition.

Both of the above models suggest frameworks for conceptualising health related anxiety and are all dependent upon an individual’s cognitive interpretations of symptoms, beliefs about illness severity and perceptions of the impact of symptoms and illness. According to these cognitive models, cognitive phenomena are crucial in understanding factors which mediate the experience of health related anxiety. The next section will review studies which have addressed such cognitive factors in elderly populations.

Cognitive mediating factors of health related anxiety in older adults.
The variability of health beliefs and attitudes in populations of older adults has been acknowledged by a number of investigators (Counte & Glandon, 1990; Dychtwald & Zitter, 1988). Given the theoretical models of health anxiety and health behaviour which have cognitive factors as their central tenet it seems logical to assume that the variability in health beliefs and attitudes may account for the differences observed in the experience of health related anxiety in elderly populations.
Reviewing the literature on negative interpretations of health status in older adults Levkoff et al (1987) report the incidence of underestimation of health status in healthy older adults as being between 14% and 37%. In a subsequent study comparing 460 older (65 years and older) and middle aged community subjects, Levkoff et al found the older group assessed their health as significantly worse than the younger adults. This result remained when the effects of physical health, psychological distress, gender and education were controlled for. A closer examination of the relative variables found that in the elderly population, psychological distress was the most important predictor of poor health assessment. The measures of psychological distress appropriately avoided physical and somatic features (e.g. constipation, sleep disturbance, changes in appetite, tightness in chest), suggesting that these results may express a reliable association between concerns about health and lower self-assessed health status.

However, other methodological drawbacks need to be mentioned. First the study is cross sectional therefore differences between the middle aged group and the older group cannot be fully attributed to age, as cohort effects cannot be completely ruled out. Secondly, limited demographic information is provided including no details about the relative numbers in each age group. Therefore it is not possible to establish whether the two groups are comparable and how the variables of physical health, gender and education were controlled for.

Attribution to ageing.

Attribution to ageing describes the cognitive interpretation or symptoms as normal physiological experiences associated with growing older. In contrast to the results reported by Levkoff et al, other researchers have found a significant degree of concealed disease and clinical conditions in elderly community samples (Williamson, 1964; Brody & Kleban, 1981). It was proposed that although the elderly individuals held accurate perceptions of their symptoms, they had erroneously attributed those symptoms to a normal ageing process rather than to disease.

Prohaska et al (1987) used a sample of 280 adults divided into groups according to age (20-39 years, 40-59 years and 60 + years) to examine the effects ageing attribution and impact of symptoms had on emotion. Subjects were recruited at a health fair, so the
sample may not be representative of wider community and may be biased towards individuals with special interests in health. The study design involved presenting individuals with hypothetical health scenarios which varied according to symptom severity, symptom duration and symptom label (ambiguous or identified). Severity of symptoms resulted in an anticipated increase in emotional distress and anxiety across all age groups. However as age increased a significantly increased tendency of individuals to attribute symptoms to normal ageing was observed. Attribution to ageing correlated negatively with emotional distress leading Prohaska et al to suggest that attribution to ageing resulted in greater acceptance of symptoms. Interpreting correlational results in terms of causal relations is inappropriate. Indeed, in this case the contrary causal relationship could be hypothesised, that lower levels of emotional distress facilitates adjustment to the ageing process and results in greater tendency to attribute symptoms to ageing. The most salient criticism of the Prohaska study is the use of hypothetical scenarios and the likelihood that these are not an adequate representation of real-life situations. The authors go some way to addressing this by conducting a field study involving volunteers from a health clinic list. Information about a specific patient-initiated visit to the clinic was gathered from individual interviews. Similar results were observed relating to an increased likelihood in older patients to attribute symptoms to ageing.

Although the field study is a commendable attempt to corroborate the results for the hypothetical scenario study, using patients' real life experiences, there are potential methodological problems in the use of this approach. Most notably the reliability of retrospective self-report is questionable. The passage of time is likely to have made accurate recall of details difficult. Also, receiving medical intervention is likely to have influenced the individual's cognitions and attributions about the symptoms through information from the medical practitioner, or a change in symptoms, or both. In addition, each participant in the field study is highly likely to have experienced different physical conditions and illnesses. No information about the method of objectively classifying severity of condition nor information about other symptom characteristics is provided, therefore the relationship between these factors and anxiety is not examined.
**Reference group theory.**

Another cognitive variable allied to attribution of symptoms to ageing is reference group theory. This suggests that comparing interpretations of one's own health status with one's peer group can have a differential effect on the evaluation of health status as positive or negative. Various researchers have found that older individuals are more likely to rate their health status in a positive light when instructed to compare themselves with their peers (Stoller, 1984; Cockerham et al, 1983) which in turn has a protective effect on the individual's propensity to experience anxiety associated with their perceived health status. Tornstam (1975) suggested that this is related to a reduction in health aspirations as age advances and reported that in elderly individuals less "health" was required for reported satisfaction with health.

**Body awareness.**

The concept of body awareness relates to the individual's likelihood to focus attention on body sensations and symptoms. Hansell and Mechanic (1991) examined the relationship between body awareness and self-assessed health status over time in a sample of older adults. In addition they considered possible antecedents of body awareness including physical and psychological health status. Based upon laboratory data indicating manipulated body awareness increased the salience of reported symptoms and the incidence of negative assessments of health (Pennebaker, 1982), Hansell & Mechanic hypothesised that individuals with higher predisposition to body awareness may be more likely to emphasise physical symptoms and attribute undue clinical significance to them which in turn may result in more negative self-assessments of health and an increase in health related anxiety. In addition they hypothesised that experience of physical illness may initiate a process of introspective appraisal in which attention is focused on the body. Continued experience of illness may result in an increase in future body awareness. Finally, Hansell and Mechanic hypothesised that an increase in psychological distress would be associated with an increase in body awareness over time.

A large random sample selected from the lists of health clinics was studied. Three age cohorts were sampled (62-64 years, 65-74 years and 75 years and older) although
oversampling of the oldest group was reported to ensure adequate numbers in this cohort. The study was longitudinal and involved two interviews 12 months apart. Measures of global self-assessed health, body awareness, overall physical health status (self-reported presence/absence of 60 symptoms) and psychological distress (comprised from a number of standardised self-report scales) were taken. All measures are based upon self-report which raises the issue of shared method variance and the possible biasing effect this can have on data. Additionally there is no mention of whether somatic items on the psychological distress scales were avoided, a necessity if confound of physical health status is to be avoided.

Results supported the first hypothesis of increased body awareness being predictive of an increase in negative self-assessment of health over time. The third hypothesis was also supported by the results indicating that psychological distress is an antecedent of increased body awareness, which concurs with the cognitive model of health anxiety (Warwick & Salkovskis, 1990). Interestingly, physical illness was not found to predict a heightened disposition to body awareness. No differences in changes of body awareness over time were associated with age or sex. The results from this study provide evidence of body awareness being a cognitive mediating factor in the experience of health related anxiety and interpretations of self-assessed health status in individuals over 62 years of age, although no increase in the likelihood of body awareness was found with increasing age.

Longitudinal studies can enable cohort effects to be ruled out however the issue of sample attrition has to be carefully examined. In the Hansell and Mechanic study, several differences were observed between the sample at initial assessment and the sample at follow-up assessment. As a result only participants who provided complete data sets were included in the analysis. It is not possible to compare the sample who dropped out with those who completed the study on anything other than demographic information collected at initial assessment. As a result, self-selection biases on health related variables cannot be ruled out and the results may have limited generalisability.
Summary and implications for future research.

Research to date within the health psychology field has been directed by cognitive models of health related anxiety. Research with older adults has provided some indications for a number of factors possibly involved in the mediation of health related anxiety in elderly populations. Much research activity has focused on the role of cognitive factors and individual differences in interpretation of symptoms, attribution to ageing and comparisons with peers have all been found to have an influence on the experience of health related anxiety in older adults. However, future research will be important in exploring these issues further particularly given the evidence that health-related anxiety can negatively effect actual and perceived health status.

Additional comparative studies comparing younger adult and older adult sample groups would help to clarify the advancement of age on health related anxiety. Longitudinal designs would be preferable to control for cohort effects although there are recognised practical difficulties in conducting longitudinal research with elderly populations.

The influence of symptom severity on health related anxiety and the interaction between objective severity and health status and cognitive factors requires further attention. Research to date suggest that cognitive factors serve to mediate the experience of health related anxiety regardless of the objective symptom severity, however, a greater focus on accurate objective measurement of illness severity will provide further opportunity to establish the relative contribution of objective and subjective illness severity on health related anxiety.

Many studies have involved community samples who have not had identified medical conditions at the time of the study. It would be valuable to research the effects of current medical conditions on the experience of health related anxiety in elderly populations. For practical reasons this is likely to involve matching groups of “ill” older adults with groups of “well” controls. An extension of this could involve comparisons with a young “ill” group and a young “well” group, to enable the relative effects of medical health status and age on reactive health anxiety to be investigated.
It would be valuable to link research in this area to research into the effects of physical and psychological well-being on disability with a particular focus on the effects health, ageing and emotional distress to illness may have on disability. Recent models of disability propose interactions between impairment, mental representations of impairment, coping strategies and disability (Johnston, 1996). Given the evidence for the influence of cognitive factors in the relationship between ageing, health and anxiety, models of disability would offer another focus of enquiry and may provide valuable information into the contribution of coping and disability on the experience of health related anxiety in older adults.

Criticisms of studies carried out to address other areas of anxiety within this population are also of value when considering future research into health-related anxiety. In particular, issues in clearly defining groups and subgroups within older populations is of critical importance. Elderly populations are far from homogenous and may embody greater diversity than other populations within society according to variables such as age, education and life experience. A number of subgroups may be identifiable, for example a 65 year old may well be very different to a 93 year old on a number of variables which could influence health-related anxiety such as physical health status, frailty, mobility. Secondly, assessment tools used to measure anxiety may not have been validated for use with this population. Or may have been validated on a heterogeneous sample (i.e. assuming homogeneity of all individuals 65 years and over). Thirdly, consideration should be given to the possibility of confounding factors. For example, side effects from drugs commonly used in elderly populations can mimic anxiety related symptoms (e.g. some analgesics, sedatives, antihistamines and caffeine). Older adults may have reduced tolerance for regular dosage or may be at risk of experiencing drug interactions (due to multiple medication regimes) which could result in anxiety related symptoms (Williams, 1979).

The relevance of the study into health-related anxiety of older adults is undeniable. Demographic information predicts a vast increase in the population of older adults within society associated with birth rate patterns and increased longevity. This will put an increased demand upon services providing mental healthcare to this population. In
addition, given the inter-relationship between physical and psychological well-being, understanding health-related anxiety and the factors which mediate against it will facilitate both physical and mental healthcare of the growing elderly population.
References.


RESEARCH ON PLACEMENT

REACTIVE ANXIETY IN OLDER ADULTS WITHIN A MEDICAL REHABILITATION SETTING:
AN EXPLORATORY PILOT STUDY.
Abstract

This report describes a piece of clinically based research which was carried out during a core clinical placement with older adults. The general aims of the study were to investigate the phenomenon of anxiety within an elderly medical in-patient population and to investigate possible appropriate psychological intervention strategies.

The context for the work is established with presentation of a model of research on placement, and discussion of the clinical, theoretical and historical context of work in this area. Specific areas of enquiry were to investigate whether anxiety was raised in this population, to investigate whether two different self-report measures yielded equivalent responses from participants; and to investigate the efficacy of a behavioural intervention for anxiety management. 13 patients participated (age 67 - 85 years). In response to the first area of enquiry, responses on the Hospital Anxiety and Depression Scale suggested that anxiety levels were raised within this population. In response to the second area of enquiry, no difference was observed between the distribution of classification frequencies on Likert Scales and the HADS in terms of the classifications from “none to severe” anxiety. However, classification according to the two measures did not correlate, suggesting that there was not a strong relationship between responses to the two measures. For the third area of enquiry, voluntary participants were arbitrarily divided into two groups (intervention group and no-treatment control group) according to which nursing bay they were in. The intervention group received instruction and practise in Abbreviated Progressive Relaxation on a daily basis for two weeks. Pre- and post- intervention HADS scores were compared between groups and within the intervention group to investigate the effects of intervention. No significant results were obtained between pre- and post- intervention HADS scores. Possible reasons for this are discussed and limitations of the study are considered.

The general aims of the study were successfully achieved within a model of clinically based research and information from the study has been used to guide further initiatives within this Service to address anxiety within a medically ill elderly population.
A Model of Research on Placement.

This piece of work was carried out within the context of the Older Adult Core Placement. As an introduction to the work, a model of research on placement will be briefly outlined.

Powell and Adams (1993) have proposed a useful model of clinically based research. They comment that research should not be regarded narrowly as a unitary concept akin to the academically driven research demanded by peer-reviewed journals and medical research councils. Alternative types of guided enquiry or levels of research should also be acknowledged and valued.

Research on placement constitutes guided enquiry within a clinical context. As such it should aim to be responsive to service needs and will often arise as changes in services develop and will frequently encompass service evaluation. Within such a framework, research may involve no statistics or data amenable to statistical analysis, small sample sizes, restricted dependent measures or a lack of control over design or selection of subjects. These characteristics are not reasons to dismiss this work out of hand. However, research on placement should remain a process of structured investigation based within a psychological context or framework with clearly defined questions or areas of enquiry. This piece of work was carried out within this research framework during the core clinical placement with older adults.

Clinical Context - Outline of service.

The clinical environment was a semi-acute medical setting offering assessment and rehabilitation of patients physical and medical care needs. The philosophy of the hospital was to offer services according to needs and not a predetermined population of patients grouped according to arbitrary age cut offs. However given the nature of services offered almost all patients were older adults. Admissions often followed emergency admissions to the local general hospital (e.g. following heart attack, stroke or serious falls), although
transfer to the assessment and rehabilitation hospital was made early in the medical care
process as soon as patients were medically stable. Admission could also be made at GP
request if, for example individuals were not coping at home. The profile of patients was
generally that of a very frail, often seriously ill elderly group.
As a semi-acute service the hospital offered medical assessment, treatment and
rehabilitation in order to prepare patients for a return home or to other appropriate
community care settings. Care was delivered within a multi-disciplinary framework
including input from medical staff, physiotherapists, occupational therapists, clinical
psychologists, generic rehabilitation assistants and voluntary workers.
Informal observations made by many workers suggested that many patients were
experiencing heightened anxiety or worry and that the level of anxiety experienced by many
patients was beginning to interfere with the rehabilitation process. The present study was
commissioned as a result of these informal observations. The remit of the study was to
investigate the needs of patients, define aims or questions to be addressed and provide a
psychological framework within which aims and research questions could be conceptualised
and addressed.

Theoretical Context - Review of the literature.

Anxiety is a common phenomenon experienced from time to time throughout life.
Community surveys of anxiety in older adults suggest that there are prevalence rates of
between 10%-20% (Salzman, 1990; Manela et al, 1996).

There are many recognised stressors to normal anxiety including physical, social and
psychological stressors. Many experiences associated with the ageing process may be
regarded as potential physical, social and psychological anxiety stressors. For example older
adults may be concerned about their health, anxiety may arise from symptoms such as loss
of mobility, poor balance or eyesight and may exist within the context of confusion and
disorientation. Older adults may have many concerns about managing on a low income,
managing at home with failing health, or having to try to sell their home and move into care.
Health related anxiety appears to be particularly salient amongst older adults. Using a worry scale designed for older adult populations, Wisocki (1988) found that health related items provoked significantly higher ratings of worry and anxiety than other categories such as finances and social conditions. Within a rehabilitation hospital setting, it is likely that individuals will have experienced health related anxiety stressors due to the events precipitating admission; e.g. illness, injury, lack of ability coping at home. Consideration of these issues suggests that older adults may experience heightened anxiety during hospitalisation.

Such anxiety is regarded as having a rational or realistic cause. Therefore these individuals would not be regarded as having a pathological anxiety disorder. It is noted that mental health problems are often underdiagnosed in elderly patients who are in hospital for physical health needs (Koenig et al, 1988, Moffic & Paykel, 1975). It is therefore possible that reactive anxiety may also be under-recognised and untreated in a rehabilitation setting.

Whilst not a recommendation for pathologising reactive anxiety, there is a risk that, if not fully acknowledged, reactive anxiety may interfere with the rehabilitation process. It has long been recognised that extreme levels of anxiety interfere with performance, attention and ability to follow instructions. (Yerkes & Dodson, 1908). Yesavage (1984) provides evidence of possible interference of anxiety on performance in older adults and found that relaxation training proved effective in reducing anxiety ratings and improving performance on a subsequent mnemonic learning task. The elderly participants in Yesavage’s study were not clinically anxious, thus their anxiety may be regarded as reactive.

**Historical Context - Previous initiatives.**

A previous pilot project carried out within this Service, investigated the efficacy of group based psycho-educational anxiety management approaches. People were referred to the group if their score on the Hospital Anxiety and Depression Scale (HADS) was outside the normal range. However, psycho-educational anxiety-management groups were not found
to be an appropriate method for this client group and various issues were raised. Firstly, the content of the group sessions was not found to be "user-friendly" due to the multi-faceted intervention. Secondly, there were practical implications of relocating very elderly, physically ill and frail people from their bedsides to the communal area of the ward. People found this frightening and anxiety provoking in itself and were reluctant to leave their bedsides. Thirdly, some of the participants did not regard themselves as anxious even though their self-reported score on the HADS was outside the normal range. This final point raises a possible issue about the construct validity of the HADS when used with older adults.

The present project was developed in order to investigate alternative methods of anxiety management within the rehabilitation setting. As such it differed from the previous psycho-educational project in a number of key ways. Firstly, the current project aimed to include all patients on the ward regardless of their score on the HADS. As well as providing potential benefit for all patients, this was intended to be less intimidating as patients would not feel "targeted". Secondly, it employed a less conceptually complex approach, using solely behavioural anxiety management techniques. Thirdly, the intervention could be conducted at the bedside, which was intended to be a more practical approach for older, very frail patients.

Aims and research questions.

The general aims of the current pilot project were to facilitate acknowledgement of anxiety in elderly in-patient populations; to investigate alternative methods of treating anxiety within this population, and to investigate the feasibility of integrating simple, anxiety management techniques into the daily rehabilitation care programmes on the ward. Within these general aims, the following specific questions were identified.
**Question 1:** Are levels of anxiety raised during periods of hospitalisation and during the rehabilitation process?

Information from the literature (Wisocki, 1988) and from clinical experience (many referrals to psychologist of non-specific anxiety related difficulties) suggest that anxiety levels may be raised at this time.

**Question 2:** Do self-report statements on the HADS standardised questionnaire reflect individuals' self perception of level of experienced anxiety (gauged from visual analogue scales and informal interview)?

Literature suggests that many standardised measures have not been fully evaluated for construct validity with older adults (Hersen & Hasself, 1992; Sheikh, 1991). Clinical information suggests that this may have been the case with the HADS during the previous pilot project.

**Question 3:** Can anxiety levels be reduced through behavioural anxiety management techniques?

Behavioural anxiety management techniques have been found to be effective with older adults who are clinically anxious (DeBerry, 1982) and with those who are non-clinically anxious (Yesavage, 1984). The current project addressed whether behavioural treatment is effective for reducing anxiety in a medically ill population.

**Behavioural Anxiety Management Techniques.**

Provisional evidence has been found to suggest that behavioural anxiety management techniques are effective with older adults (Yesavage, 1984; DeBerry, 1982). For the present study the relaxation technique of Abbreviated Progressive Relaxation (Lindsay & Baty, 1986) was selected on account of the relatively simple procedures involved. The technique is an abbreviated form of progressive relaxation as first described by Jacobsen (1938). It
involves the individual recognising the contrast between tensing and relaxing the muscles and progressing through the muscle groups in the body employing a tense-release cycle. Through “in vivo” experience combined with monitoring of internal muscle states, the individual is able to recognise the contrast between tension and relaxation.

Methods.

Participants.
The project aimed to include all patients on a 24 bedded ward. All patients had medical needs. Many were physically frail and age the range was up to 94 years.

The ward was partitioned into 4 nursing bays (2 for men and 2 for women) with six patients to a bay. Two of the bays (one of male patients and one of female patients) received relaxation intervention. The other two bays served as a no-treatment control group. All patients were invited to participate in the study which was presented as part of the daily rehabilitation programme which individuals were able to choose to participate or not.

At the end of the controlled data collection period, individuals who had served as controls were offered active relaxation intervention.

Intervention period.
Ten intervention sessions were conducted. Intervention was daily and consisted of a 15 to 20 minute period during which time relaxation training was undertaken. This was at the same time each day, and coincided as far as possible with the early afternoon nursing staff handover. It was hoped that this would minimise disruption to the nursing staff and would capitalise on a generally quieter time of the day. It was also hoped that this may control for any variations in mood, anxiety or fatigue which may have been evident at different times of the day. Prior to the intervention period written information regarding the study was provided to patients.
Intervention procedure.
A script was prepared for the Abbreviated Progressive Relaxation (after Lindsay & Baty, 1986) in order to make delivery of the intervention as uniform as possible. Two therapists delivered the relaxation training. The therapists alternated between the two active treatment bays to control as far as possible for therapist variables.

Assessment measures.
1. Hospital Anxiety and Depression Scale (HADS) (Snaith & Zigmund, 1994)
Each patient was assessed using the HADS before and after the intervention period in order to evaluate whether there was any change in the degree of anxiety over the two week period.

2. Self-report Likert Scale. Before and after each daily intervention session, patients were asked to complete a single 4 point likert scale to rate their level of relaxation. These ratings were used to evaluate whether there was any change in perceived degree of relaxation immediately following the intervention. Likert scale scores were compared with HADS scores to see if the two measures gained consistent results.

Results.

Subjects.
Patients were included in the analysis provided pre and post HADS scores were obtained and that at least 5 relaxation sessions had been completed. It was necessary to use five sessions as a cut off as so few patients participated in all the sessions given the voluntary nature of the intervention. Thirteen patients were included in the analysis, 6 from the active treatment condition and 7 from the control condition. Data from these two groups are analysed below.
Descriptive data.

No age differences were observed between the groups. The mean age in the treatment group was 78.33 years (range = 69 - 85 years, SD = 5.42 years) and the mean age in the control group was 75.71 years (range = 67 - 85 years, SD = 6.60 years). No reliable data was available on general intellectual functioning, years in education, nor mental state at time of enquiry. However, from informal information and clinician judgement, the two groups did not appear to differ. It was also difficult to establish an objective measure of the degree of frailty, or medical status. However, the ward Sister subjectively rated all patients on the ward at the time of enquiry as being of high nursing care need.

Question 1 - Are levels of anxiety raised during periods of hospitalisation?

Pre-intervention HADS scores for all 13 participants were classified according to the severity bands in the HADS manual. The frequencies are plotted in Figure 1. Results from the HADS provide some evidence that anxiety levels are raised as the distribution of frequencies shows a trend towards the more severe classifications.

Figure 1. Frequency distribution of HADS score classifications.
Question 2: Do self-report statements on the HADS standardised questionnaire, reflect individuals' self perception of level of experienced anxiety?

The first likert scale ratings (i.e. pre-intervention) for all 13 subjects are plotted in a frequency chart presented in Figure 2. The distribution was compared to that of the HADS scores. The distribution of likert scale ratings shows a trend towards the milder end of the range, whereas the HADS distribution showed a trend towards the more severe end of the range. However the two distributions can not be judged to differ greatly as there is just one different classification between mild and moderate classifications between the two groups, as indicated in Table 1.

![Frequency distribution for first likert scale ratings.](image)

### Severity classification

**Figure 2. Frequency distribution for first likert scale ratings.**

<table>
<thead>
<tr>
<th></th>
<th>Normal/none</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Likert scale rating</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 1. Table showing frequencies for severity classifications for the two measures of anxiety.**
Inspection of the classifications for individual cases on both measures suggested a degree of intra-individual variability. Five cases were classified within the same range on both Likert scale and HADS, 5 cases were within one classification on the two measures and three cases were two classifications apart on the two measures (i.e. at either end of the classification range). This information is presented in Table 2.

<table>
<thead>
<tr>
<th>Case Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS</td>
<td>Mod</td>
<td>Mod</td>
<td>Sev</td>
<td>Mod</td>
<td>Mild</td>
<td>Non</td>
<td>Sev</td>
<td>Mod</td>
<td>Mild</td>
<td>Non</td>
<td>Mild</td>
<td>Mild</td>
<td>Mod</td>
</tr>
<tr>
<td>Likert</td>
<td>Mild</td>
<td>Mod</td>
<td>Mild</td>
<td>Mild</td>
<td>Sev</td>
<td>Non</td>
<td>Mod</td>
<td>Sev</td>
<td>non</td>
<td>Mod</td>
<td>Mild</td>
<td>Mild</td>
<td>Mild</td>
</tr>
</tbody>
</table>

Table 2. Table showing classifications per case on each of the two measures of anxiety.

To further examine the possible relationship between the two measures for individual cases, Spearman's rho correlation coefficient was calculated. The correlation coefficient was not significant ($r=.224$, $p=.463$), suggesting that there is no relationship between individual's reports on the two measures.

**Question 3: Can anxiety levels be reduced through behavioural anxiety management techniques?**

Mann Whitney statistics were calculated to establish if there was a difference between the pre-intervention levels of anxiety between the treatment group and the control group as measured by HADS score. No significant difference was observed. The results are presented in Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Treatment group</th>
<th>Control group</th>
<th>Mann Whitney</th>
<th>Signif. of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>11.67(4.23)</td>
<td>10.86(3.93)</td>
<td>19.00</td>
<td>.836</td>
</tr>
</tbody>
</table>

Table 3. Mann Whitney comparisons between groups on pre-intervention HADS anxiety scores.
Mann Whitney statistics were calculated to explore for differences in anxiety scores on the HADS following the intervention period. Results are presented in Table 4. No significant difference was observed.

<table>
<thead>
<tr>
<th></th>
<th>Treatment group</th>
<th>Control group</th>
<th>Mann Whitney</th>
<th>Signif. of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>U</td>
<td>U</td>
</tr>
<tr>
<td>Post-HADS</td>
<td>9.67 (2.34)</td>
<td>10.43 (2.94)</td>
<td>16.50</td>
<td>.534</td>
</tr>
</tbody>
</table>

Table 4. Mann Whitney comparisons between groups on post-intervention HADS anxiety scores.

To explore for any difference in anxiety scores before and after the intervention period within the treatment group, Wilcoxon Signed Ranks statistics were calculated. Results are presented in Table 5.

<table>
<thead>
<tr>
<th></th>
<th>Pre-HADS score</th>
<th>Post-HADS score</th>
<th>Wilcoxon</th>
<th>Signif. of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Z</td>
<td>Z</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>11.67 (4.23)</td>
<td>9.67 (2.34)</td>
<td>1.48</td>
<td>.139</td>
</tr>
</tbody>
</table>

Table 5. Wilcoxon signed ranks test comparing pre and post intervention HADS scores within the treatment group.

The mean HADS score at post intervention was lower than the mean pre-intervention HADS score within the treatment group. However this difference did not reach significance.
Summary and Discussion.

The current study identified three areas of enquiry. Firstly whether anxiety levels are raised within this patient group. Frequencies of self-reported anxiety levels (HADS scores) for 13 elderly medical patients were examined to explore whether anxiety levels may be raised during admission to hospital. The distribution of frequencies showed a trend towards greater severity which suggests that anxiety levels are high within this sample. However the question of whether anxiety is raised as a result of being hospitalised is unanswerable, as constraints of the study did not permit comparison with a non-hospitalised control group. Further research with appropriate control groups and larger samples would be required to address this point.

The second area of enquiry addressed whether the HADS anxiety scores reflected individuals self-perceptions of anxiety level as measured by a single likert scale. No significant correlation was observed between the two measures for the 13 patients. This suggests a lack of consistency between individuals' self-reported anxiety on the two measures and warrants further research, with larger samples. Inspection of frequencies for the two measures suggests that overall distributions do not differ markedly, however this does not provide any indication of comparison between measures for individual cases.

The third area of enquiry addressed the efficacy of Abbreviated Progressive Relaxation in reducing self-reported anxiety. This was explored by making two comparisons: firstly between the treatment and no-treatment groups' self ratings of anxiety after the intervention; secondly, by comparing pre and post intervention anxiety ratings within the treatment group. No significant differences were observed on either of these comparisons, although the mean HADS score for the treatment group was lower after intervention than before. This may be suggestive of an encouraging trend but further research is required with larger groups and with additional control measures to explore this further.

Other than particularly small numbers which make statistical comparisons weak, additional factors which may have contributed to the lack of positive results are suggested. Firstly, although efforts were made to conduct intervention at a quiet time of the day, the ward was
still busy and noisy which is unlikely to be conducive to relaxation. Secondly, although the physical demands of Abbreviated Progressive Relaxation are minimal, they may still have been too extensive for this group of patients given their frailty and physical condition. Thirdly, the intervention period may not have been long enough to effect a change in the patients' anxiety levels, particularly given not all the subjects participated in all sessions. However, Lindsay and Baty (1986) reported benefits in as few as 10 sessions when they employed Abbreviated Progressive Relaxation with learning disabled adults. The constraints of time and resources precluded more sessions and extending the study to other wards within the hospital. Single case study design would provide an alternative methodology for future research which may overcome this difficulty.

Given the constraints of carrying out research in the clinical context, various limitations and weaknesses of the project are acknowledged. The paucity of research with very elderly, medically-ill patients may attest to the challenges posed to researching this clinical group. Despite the discussed limitations, this piece of work was successfully carried out within a framework of placement based clinical research. In response to informal observations of possible raised anxiety within this group of patients, the current study offered a guided enquiry within the context of a psychological framework; aims were clearly defined and addressed and findings from both the results and the process of the study will be valuable in guiding future clinical research within this service.
References


SMALL SCALE RESEARCH

THE INFLUENCE OF HIGH VERSUS LOW LEVELS OF PAIN ON INFORMATION PROCESSING.
A PILOT STUDY WITH CHRONIC PAIN PATIENTS
Abstract

Previous research has suggested that the experience of pain can interrupt particular aspects of information processing. This pilot study was designed to investigate the effects of high pain versus low pain on a variety of information processing tasks.

Specific research questions were; firstly could previous research findings be replicated? Secondly, are other aspects of information processing skills differentially influenced by the experience of pain? Thirdly, are self-report levels about problems with concentration higher amongst individuals with high pain than amongst individuals with low pain.

Within a theoretical framework of a limited capacity processing system it was hypothesised that high pain would have a greater detrimental effect than low pain upon information processing. Fourteen chronic pain patients participated. A median split was performed on their self-ratings of pain to establish a high pain and a low pain group. The Test of Everyday Attention was used to assess information processing ability. Non-parametric statistics were calculated to compare between group performances. Results indicated that previous research findings were not replicated in this study. No significant results were observed between the groups on any measures. Possible reasons for this were considered within the context of wider limitations of the study.
Introduction

The relationship between attention and pain has been investigated extensively over the last 20 years. Research into attention-based cognitive coping strategies (e.g. distraction) on the experience of experimentally induced pain has yielded equivocal results. Some studies have reported the efficacy of these strategies in reducing reported intensity of induced pain (e.g. Devine & Spanos, 1990), and in increasing pain thresholds and tolerance to induced pain (e.g. Hodes et al, 1990). On the otherhand, a number of studies have not reported any positive effect of distraction and other attention-based cognitive strategies on of experimentally induced pain experiences (e.g. McCaul et al, 1992). With regard to clinical populations, research results are also mixed. In a review Tan (1982) suggests that there is little unequivocal support for the efficacy of cognitive strategies in the reduction of pain, whereas a more recent meta-analysis by Fernandez and Turk (1989) suggests that 85% of studies with clinical populations report a positive effect of attention-based cognitive strategies on the experience of pain.

In order to explore possible explanations for the mixed research findings, consideration must be given to the theoretical issues of information processing and the demands on information processing posed by the processing of pain information and distractor tasks. The effects of pain on attention within a theoretical framework of information processing has received little research attention and yet, particularly in studies which found no effects of distraction on pain, this reciprocal relationship (i.e. the possible effects of pain upon information processing) is of critical importance. For example, in an experiment with athletes, Walker (1971) studied the effects of distraction on induced pain. Finding no significant beneficial effects, Walker considered the effects that the pain may have had on the performance of the intended distractor task. Results indicated that the experience of pain had a significant interference effect on the performance of the psychomotor task. Walker suggested that processing of pain information and the task demands were competing for the same, limited processing.
resources and moreover that processing of pain information took precedence over processing of the task requirements.

Theoretical considerations of information processing.

Information processing systems must select which stimuli to process and which are to control responses and behaviour. Attentional functioning is a key cognitive function at both of these levels of information processing. The focus of the present enquiry is to explore the possible interference effects of extreme pain on attentional tasks and information processing in chronic pain patients. Therefore models which address levels of control of information processing will be considered. Shiffrin and Schneider (1977) propose a model with two levels of information processing, automatic and controlled. Automatic processing does not require conscious control and is employed in the processing of perceptual attributes of stimuli and in the processing of highly familiar actions and responses. Automaticity can be established through repeated practise of an action or behaviour, therefore behaviours which at one time required painstaking concentration and consciously controlled attention to execute, such as driving, can become automatic through learning and familiarity. As in the example of driving, controlled processing is required in novel situations or when unfamiliar, complex responses are needed. Controlled processing characterises the conscious intention of the individual to attend to and to process particular stimuli. To maximise efficiency, automatic processing continues as far as possible before controlled processing takes over.

The model has been criticised for implying the existence of a homunculus to do the controlling through not adequately accounting for the process by which the levels of control interact (Allport, 1980). Alternative models of information processing accommodate this drawback. Shallice and Norman’s (1986) cognitive schema model and Baddeley’s (1986) working memory model both espouse different levels of information processing and both propose components which are responsible for higher cognitive functions of planning and co-ordination of information processing. Shallice
and Norman propose the existence of a supervisory attentional control system (SAS), which is similar to Baddeley's central executive processor (CES). The conditions under which controlled processing is required models include tasks involving planning and decision making; activities which are unfamiliar or have novel sequences of actions; processing of dangerous or technically difficult activities; and activities or tasks which require inhibition of a strong or habitual response.

**Pain and information processing.**

Pain provides a unique type of information which alerts the individual to actual or potential tissue damage (Stembach, 1989). Given the implications for self-preservation (or risk of tissue damage) it is adaptive that pain information be initially processed automatically and without conscious intention. However, when the individual's pain threshold is exceeded and the experience of pain becomes noxious, processing of pain information captures attention employed elsewhere and continues within the domain of controlled processing and within the conscious awareness of the individual to alert them to actual or potential tissue damage. Capturing attention already employed elsewhere would cause disruption to other information processing activities. Within this framework, it also seems reasonable to hypothesise that the extent of pain will have an effect upon the disruption of information processing, with high pain causing greater disruption than low pain.

Further support for this hypothesis can be drawn from theoretical models of attentional biases in emotional disorders. Bower (1981) proposes a theoretical model based on schema theory, which suggests that emotions are associated with activation of relevant emotional units in semantic memory. Once activated, emotional units in turn tend to activate concepts or events associated with emotion. Therefore when in a state of emotion a person is primed to perceive or attend to emotionally congruent information. Beck et al (1979) provide a data driven explanation which interprets clinical phenomenon and provides a similar prediction to Bower's theoretically driven model.
Beck et al suggest that emotional disorders such as depression and anxiety arise from the activation of dysfunctional belief schemas. Once these schema are activated they direct attention to information which is congruent with dysfunctional beliefs. Models of attentional bias in emotional disorders have been supported by experimental and clinical research using a number of approaches including priming paradigms, reaction time measures and memory for emotionally salient information (Wells & Matthews, 1994). Analogies between the experience of pain and of emotion can be proposed. It is possible that once an individual is experiencing pain, attention is biased towards pain-congruent information with processing resources being used to scan site of pain and monitor extent of pain. Again a relationship between extent of pain and use of resources to process pain can be assumed with more extreme levels of pain attracting more attention and processing resources.

**Previous research on information processing in chronic pain.**

A consideration in the interpretation of studies is the type of pain being studied. In clinical populations, the majority of studies have examined the experience of acute pain. An under-researched group is patients with chronic pain of a benign and persistent nature. The following paragraphs review the limited amount of previous research with these patients.

Using a clinical group of chronic pain patients, Eccleston (1994) investigated the effects of pain on performance on an attentional task requiring controlled processing, (as described by Windes, 1968). This was achieved by means of a numerical interference task requiring subjects to name either the value of (identical) digits on a card or the number of digits printed on the card. The interference task has similar characteristics to the stroop paradigm (Stroop, 1935), requiring subjects to inhibit the dominant response of “value” in the second condition, in favour of the target response, “number of digits”. Results supported the sensitivity of the task to controlled information processing as all participants performed at a significantly slower rate on the
interference condition. However, no interaction was observed between performance and the extent of reported pain.

Eccleston made the interference task more complex by presenting two cards simultaneously. Subjects were required to carry out the same degree of processing for each of the cards as in the previous task and were additionally required to compare the cards and make a decision as to which card had the larger digit value or the larger number of digits. Performance for all participants was again significantly slower for the interference task. Furthermore, patients who reported high degrees of pain performed at a level significantly below that of the patients reporting low pain, although this was only observed on the most difficult trials. Eccleston interpreted this as evidence of high pain processing interfering with the processing of other information within a model of limited attentional processing capacity. However, Eccleston did not report nor control for mood disturbance within his groups. A relationship between mood disturbance and chronic pain is well documented (e.g. Merskey, 1986; Craig, 1989) and it seems reasonable to expect that patients experiencing high pain may have more marked mood disturbance than those experiencing low pain. The sensitivity of information processing to the effects of disturbed mood is also well documented (Wells & Matthews, 1994). As mood disturbance was not well controlled for in this study, possible differences in mood disturbance may have accounted for a significant proportion of the variance observed between the groups on attentional functioning.

Eccleston (1995) replicated his original findings in a further study which included a measure of mood disturbance (the Hospital Anxiety and Depression Scale, Zigmund & Snaith, 1983). No differences in mood were observed between the groups, suggesting that the significant difference between high and low pain subjects on attentional functioning was independent of mood disturbance in this study.

Within the context of limited capacity information processing systems such as those proposed by Shiffrin & Schneider and Shallice & Norman, Eccleston’s work suggests that the processing of pain information occurs within the domain of controlled processing, competes for limited processing resources with other information and is
given precedence over processing of other information. When the limitations of the system’s resource capacity are exceeded, information processing efficacy is compromised. Limitations can be exceeded by extreme pain or increased complexity of task demands.

**Present study.**

Results from Eccleston’s work raise a number of issues for further research. Firstly, the paradigm used by Eccleston is experimentally designed and employs laboratory equipment. This type of equipment is seldom available to clinicians nor appropriate to their clinical work with chronic pain patients. The aim of the present study is to examine the possible effects of extent of pain on attentional functioning using a standardised and validated assessment tool employed in clinical practice.

Secondly, Eccleston has addressed only one facet of information processing, that of the role of a supervisory attentional system (Shallice & Norman, 1986), or controlled processor (Shiffrin & Schneider, 1977) or central executive system (Baddeley 1986). These models of information processing are multi-dimensional and present a number of facets of information processing or attentional functioning. The present study aims to examine the possible effects of extent of pain upon different facets of information processing.

The present study was a pilot study carried out as a preliminary investigation of a sample of chronic pain patients. It was conducted within the context of wider research investigations which aimed to compare information processing between different clinical groups.
In line with the above aims the following questions and hypotheses were developed.

**Question 1: Are Eccleston's findings replicable using the Test of Everyday Attention?**

The Test of Everyday Attention (TEA) (Robertson et al, 1994, 1995) is a composite assessment made up of a number of subtests (outlined in the method section) which permits assessment of a wide range of attentional processing. From a factor analysis carried out during standardisation, the subtests were found to load on four key factors: visual selective attention, attentional switching, sustained attention and auditory-verbal working memory. It is hypothesised that subtests which sample auditory-verbal working memory are most similar to Eccleston's experimental number interference paradigm due to the extensive involvement of higher order attentional systems such as the supervisory attentional system and the central executive system. Therefore in replication of Eccleston's findings it is hypothesised that high pain patients will perform at a level below that of low pain patients on the subtests which load on the auditory-verbal working memory factor.

**Question 2: Are differences between the performance of high pain patients and low pain patients observable on other facets of attentional functioning?**

A lack of previous research was found which had studied this in chronic pain patients using pain as the independent variable and information processing as the dependent variable. From the theoretical models of processing of pain information, it is hypothesised that differences would be observed between the performance of high pain patients and low pain patients on other TEA subtests. Although high pain would be expected to interrupt all aspects of attentional functioning, sustained attentional functioning is hypothesised as being particularly vulnerable. The TEA employs a vigilance paradigm to sample sustained attention which requires individuals to self-sustain attention during monotonous tasks. This less active task demand could be regarded as presenting less competition to the processing of pain information.
**Question 3:** Do high pain patients report higher levels of attentional disturbance than low pain patients?

Self-report information is of interest as it provides an indication of individuals' self-perception of their level of functioning. Discrepancies between informal self-report information and more formal assessments of functioning enable hypotheses to be proposed about the relevance of the measures used or possible strategies employed to compensate for difficulties.

**Method**

**Subjects.**

Fourteen patients with a diagnosis of benign, persistent, chronic pain (Turk, Meichenbaum & Genest, 1983) were recruited to the study. All patients were engaged in active pain management treatment programmes through which they were recruited. All patients had experienced continuous, persistent pain for 12 months or more. Patients were screened for possible conditions or injuries which may cause attentional deficits. No history of serious illness, neuropsychiatric illness, whiplash injury, nor head injury was reported. and no head pain was reported at time of assessment. All patients reported lower back pain, 2 had concurrent pain in the thoracic region. Five patients reported taking codeine based analgesics, 3 were taking NSAID based analgesics and 6 were taking over the counter analgesia. Five of the patients were also taking a variety of other medications including antidepressants (SSRI and tricyclic), hormone replacement (thyroxine) and benzodiazepines (diazepam).
Measures.

1. *Assessment of pain intensity*

Two measures were used:

i) The Short-form McGill Pain Questionnaire (SFMPQ) (Melzack, 1987). Of interest was the present pain inventory (PPI) from the SFMPQ. This is a five-category intensity scale ranging from 0 = no pain to 5 = excruciating;

ii) a continuous visual analogue scale (VAS) of intensity. This was 100mm long and was anchored by “No pain” on the left and “Worst possible pain” on the right (after Eccleston, 1994, 1995).

Patients were classified according to their responses on the VAS and the PPI; those above the median response (median VAS = 39mm, range 10 - 76) were classified as high-pain and those below the median response were classified as low-pain. The PPI responses discriminated the participants into the same groups.

2. *Assessment of impact of pain.*

A VAS was employed to assess the impact of pain on an individual’s day to day life. The VAS was 100mm long and was anchored on the left by “No disruption to life” and by “Total disruption to life” on the right.

3. *Assessment of mood disturbance.*

The Wimbledon Self Report Scale (WSRS) (Coughlan & Storey, 1988) was employed as a measure of mood disturbance. This measure was developed for use with neurologically and physically ill patients. It does not include any somatic items usually included in other scales to measure mood disturbance as these may confound the report of patients with physical conditions leading to over estimation of the degree of mood
disturbance. For this reason it was deemed appropriate for use with chronic pain patients.

4. **Self-report of concentration and attention.**

Five point Likert scales were employed to measure patients' self perception of current levels of concentrate and attention ability. Three questions were asked which aimed to tap focused attentional functioning, divided attentional functioning and ability to sustain attention without distraction. It is acknowledged that these questions and scales do not represent valid nor reliable assessment measures in formal psychometric terms. Nonetheless they were regarded as providing potentially valuable information.

5. **Assessment of information processing.**

The Test of Everyday Attention (TEA) (Robertson et al, 1994) was employed to measure information processing. The TEA samples selective attention, attentional switching, sustained attention and higher attentional skills associated with control and organisation of attention. The TEA was standardised on 154 normal volunteers and age-related norms are provided in 4 age bands from 18 to 80 years. No effects of gender nor general intellectual functioning on TEA performance was found in the standardisation sample. The TEA is comprised of the following subtests:

*Map Search (MS)* provides a measure of selective attention, requiring the subject to search for predetermined symbols amongst an array of distractors. This requires active inhibition of distractors and selective activation of targets. During standardisation of the TEA, Map Search was found to load on the same factor as the Stroop test. The subtest is timed, so speed of performance contributes to the derived score.

*Elevator Counting (EC)* requires subjects to listen to and count a series of tones presented at an irregular rate. Based on a task found to be sensitive to the ability of
patients with localised right frontal lobe lesions (Wilkins et al, 1987), Elevator Counting provides a measure of sustained attention requiring subjects to self-sustain attention during a monotonous task.

*Elevator Counting with Distraction (ECD)* requires subjects to count low tones whilst ignoring higher pitched tones. During standardisation Elevator Counting with Distraction was found to load on the same factor as the PASAT (Gronwall 1977) which tapped auditory-verbal working memory.

*Visual Elevator (VE1 and VE2)* requires subjects to count up and down in single increments according to visually presented cues. It was found to load on the same factor as the Modified Wisconsin Card Sorting Task (Nelson, 1976) and is believed to sample attentional switching ability. Two derived scores are calculated for response accuracy (VE1) and time per switch (VE2). The test is self-paced although timed by the administrator which enables speed of switching to be examined.

*Elevator Counting with Reversal (ECR)* presents the same task requirements as Visual Elevator but stimuli are presented aurally and at a fixed rate. This subtest was found to sample auditory-verbal working memory. This was found to be the most demanding of the 8 subtests for the normal standardisation sample.

*Telephone Search (TS)* requires subjects to search for target symbols in a list of distractors. It provides a measure of selective attention. The subtest is timed and score is adjusted for accuracy.

*Telephone Search whilst Counting (TSC)* combines the timed visual search for target symbols in the Telephone Search subtest, with a simultaneous task of counting simple strings of aurally presented tones. A measure of dual task decrement is provided by combining performance on both of the Telephone Search subtests which controls for speed and accuracy.
Lottery (LOT) is an auditory test in which subjects have to listen for target numbers amongst distractors. Subjects are required to self-sustain attention during a prolonged (10 minutes) monotonous task. Sustained attention is measured through vigilance as targets occur infrequently.


The National Adult Reading Test (NART, second edition) (Nelson & Willison, 1991) was employed to provide an estimate of general intellectual functioning.

**Procedure.**

Approval was obtained from the Local Research Ethics Committee before the study commenced. All potential participants were provided with a written information sheet. A further verbal explanation was provided to patients who expressed an interest in participating. All patients participated voluntarily and were able to withdraw from the study at any point without providing an explanation. It was made clear to all participants that the study was independent of any treatment they were receiving or any treatment they may receive in the future. On recruitment, all participants signed a consent form.

The above measures were administered in a single assessment session. This was not possible in the case of one patient due to timetabled commitments on the pain management programme. The assessment was divided over two sessions with less than 48 hours between them. Pain ratings were administered at both sessions for this participant although no differences were observed. Relevant background information was gathered during a brief interview (using a standard protocol) before any measures were introduced, this enabled screening for exclusion criteria and collection of demographic data. Measures were administered in the same order for all participants and standardised administration procedures were followed.
Results

Descriptive data.

Using Mann Whitney U statistics, the groups were compared on age, general intellectual functioning (NART scores) and mood disturbance (WSRS scores). The results are presented in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>Mann Whitney</th>
<th>Signif. of</th>
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<tbody>
<tr>
<td></td>
<td>High pain</td>
<td>Low pain</td>
<td>U</td>
</tr>
<tr>
<td>Age</td>
<td>39.4(11.1)</td>
<td>38.4(9.8)</td>
<td>22.00</td>
</tr>
<tr>
<td>NART</td>
<td>102.7(9.3)</td>
<td>106.9(9.1)</td>
<td>20.50</td>
</tr>
<tr>
<td>WSRS</td>
<td>5.6(7.7)</td>
<td>0.9(1.2)</td>
<td>5.50</td>
</tr>
</tbody>
</table>

Table 1. Mann Whitney comparisons between high and low pain groups on age, general intellectual functioning and mood disturbance.

The groups did not differ in terms of age nor general intellectual functioning. The high pain group reported a significantly higher degree of mood disturbance than the low pain group.

Mann Whitney U statistics were calculated to compare groups on the degree of pain reported. The results are presented in Table 2. Significant differences are observed between the high pain and low pain groups on both measures of pain.

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>Mann Whitney</th>
<th>Signif. Of</th>
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<tbody>
<tr>
<td></td>
<td>High pain</td>
<td>Low pain</td>
<td>U</td>
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<tr>
<td>VAS</td>
<td>60.3(11.9)</td>
<td>22.4(8.1)</td>
<td>.000</td>
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<tr>
<td>PPI</td>
<td>2.9(0.7)</td>
<td>1.6(0.5)</td>
<td>4.00</td>
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</table>

Table 2. Mann Whitney comparisons between groups on measures of the extent of pain.
Question 1: Can Eccleston’s findings be replicated using the Test of Everyday Attention?

It was hypothesised that the subtests which most closely approximated the task demands of Eccleston’s laboratory based assessment paradigm were those which sampled the higher attentional control skills and which loaded on the auditory-verbal working memory factor of the TEA; Elevator Counting with Distraction and Elevator Counting with Reversal. To replicate Eccleston’s findings, it was hypothesised that the high pain patients would perform at a level significantly below that of the low pain patients. Mann Whitney statistics are presented in Table 3. No significant differences were observed between the high pain and low pain groups on these subtests and the hypothesis was not supported.

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<th>Mean (SD)</th>
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<tr>
<td></td>
<td>High pain</td>
<td>Low pain</td>
<td>U</td>
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<tr>
<td>Map search</td>
<td>9.6(4.0)</td>
<td>12.0(4.0)</td>
<td>16.50</td>
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<tr>
<td>Elevator counting</td>
<td>6.9(0.4)</td>
<td>6.9(0.4)</td>
<td>24.50</td>
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<tr>
<td>Elev. Count with Distract.</td>
<td>9.0(2.6)</td>
<td>10.4(2.4)</td>
<td>16.00</td>
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<tr>
<td>Visual Elev.(accuracy)</td>
<td>10.7(3.6)</td>
<td>9.7(3.5)</td>
<td>19.50</td>
</tr>
<tr>
<td>Visual Elev.(switch speed)</td>
<td>8.6(2.1)</td>
<td>9.1(4.0)</td>
<td>19.00</td>
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<tr>
<td>Elev. Count with Reversal</td>
<td>8.6(4.4)</td>
<td>8.6(2.1)</td>
<td>19.50</td>
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<tr>
<td>Telephone Search</td>
<td>11.6(2.9)</td>
<td>11.1(1.9)</td>
<td>24.00</td>
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<tr>
<td>Telephone Srch (dual task)</td>
<td>10.4(4.4)</td>
<td>9.0(2.2)</td>
<td>21.00</td>
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<tr>
<td>Lottery</td>
<td>8.6(2.9)</td>
<td>9.4(2.2)</td>
<td>21.00</td>
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Table 3. Mann Whitney comparisons between high and low pain groups on the subtests of the TEA.

It is of interest to consider how both groups of pain patients performed in relation to the TEA normative data. The mean normative data score is 10 with each scale point representing one third of a standard deviation. Therefore both groups score within one standard deviation of the mean (norm score) on all subtests other than Elevator Counting, on which both groups scored 6.9. Consideration of the percentile equivalent
indicates that both pain groups performed at a level below that of 88% of the normative sample on Elevator Counting which taps sustained attention.

**Question 2:** Are other facets of attentional functioning adversely affected by extent of pain?

It was hypothesised from models of information processing that other facets of attentional functioning would be disrupted by the experience of high pain. Sustained attention as measured by Elevator Counting and Lottery subtests were hypothesised as being particularly sensitive to disruption. As depicted in Table 3, no significant differences were observed between the two groups on any subtest of the TEA. This suggests that for these groups the extent of pain has no detrimental effect on TEA performance.

Correlation coefficients were calculated to explore whether there was a relationship between extent of pain and TEA performance for the whole sample. TEA subtests were correlated with the pain measures (PPI and VAS). Spearman’s rho correlation coefficients are presented in Table 4.

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<th>MS</th>
<th>EC</th>
<th>ECD</th>
<th>VE1</th>
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<th>PPI</th>
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<td>- .259</td>
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*Correlation is significant at .01 level.

Table 4. Spearman’s rho, correlation coefficients between measures of pain and TEA subtests.

No significant correlation coefficients were observed. This suggests that for this sample of patients there is no significant relationship between the extent of pain and performance on the TEA.
The hypothesis informed by previous research suggests a negative relationship between extent of pain and attentional processing (i.e. greater extent of pain is associated with poorer test performance). However, a number of the TEA subtests correlated positively with extent of pain (i.e. greater extent of pain is associated with higher test performance), although these correlations were weak.

The two groups differed significantly on degree of mood disturbance with high pain patients reporting higher levels of mood disturbance than low pain patients. Although the groups' performance did not differ significantly on any of the TEA subtests, correlation coefficients were calculated to explore any possible relationship between WSRS and TEA performance. The results are presented in Table 5.

<table>
<thead>
<tr>
<th>MS</th>
<th>EC</th>
<th>ECD</th>
<th>VE1</th>
<th>VE2</th>
<th>ECR</th>
<th>TS</th>
<th>TSC</th>
<th>LOT</th>
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</thead>
<tbody>
<tr>
<td>WSRS</td>
<td>-.406</td>
<td>-.078</td>
<td>-.375</td>
<td>.263</td>
<td>.018</td>
<td>-.420</td>
<td>-.221</td>
<td>.108</td>
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Table 5. Spearman's rho correlation coefficients between mood disturbance and TEA performance on the TEA subtests.

No significant relationships between TEA performance and mood disturbance were observed for this sample. Seven of the correlation coefficients supported the predicted negative direction of the relationship between mood disturbance and test performance (i.e. higher mood disturbance is associated with poorer attentional functioning). However three of the correlations suggested a positive relationship between mood disturbance and attentional functioning, although these correlations were weak. Of particular interest is the positive relationship between mood disturbance and Visual Elevator speed of switching (VE2), which has a speed component. This finding is interesting given the recognised sensitivity of speed to mood disturbance (e.g. Brand & Jolles, 1987).
**Question 3:** Do high pain patients report higher levels of anecdotal disturbance of attention than low pain patients?

Responses to the self-report concentration questions were compared between groups, using Mann Whitney statistics. The results are presented in Table 6.

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<tr>
<th></th>
<th>Mean (SD)</th>
<th>Mann Whitney</th>
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<tr>
<td></td>
<td>High pain</td>
<td>Low pain</td>
<td>U</td>
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<tr>
<td>Focused attn.</td>
<td>3.3(1.1)</td>
<td>3.3(1.5)</td>
<td>24.50</td>
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<tr>
<td>Divided attn.</td>
<td>2.7(0.8)</td>
<td>2.1(1.5)</td>
<td>14.50</td>
</tr>
<tr>
<td>Sustained attn.</td>
<td>3.1(1.2)</td>
<td>2.7(1.6)</td>
<td>21.00</td>
</tr>
</tbody>
</table>

Table 6. Mann Whitney comparisons between groups on self-reported disturbance of concentration, measured using Likert scale ratings.

No significant differences were observed between the groups on self-reported concentration ability. No significant correlation coefficients were observed (using Spearman's correlation of ranks) between TEA subtests and self-report of attentional functioning.

**Discussion**

Before discussing the findings, a number of limitations of the present study require consideration. Firstly the numbers of subjects per group are small. Whilst the distribution-free statistics employed are appropriate to use with small numbers, these procedures are recognised as being less powerful than parametric statistics. Therefore the likelihood of making Type II errors and assuming a false negative result (not accurately rejecting the null hypotheses) is high. Future research is required, with larger sample sizes.
Secondly, this study did not include a “no pain” control group. Although research questions were addressing the effects of high pain compared to low pain on information processing ability, the absence of a “no pain” control group makes interpretations of non-significant results limited. In future research, the inclusion of such a group will enable examination of whether pain patients are performing at a level comparable to no-pain controls, or conversely whether chronic pain, regardless of severity, disrupts functioning.

Thirdly, it is acknowledged that many of the drugs being taken by the participating patients effect information processing (Ashton, 1983), yet it was not possible to meaningfully control for these effects in the current study. In psychiatric research, various systems of converting dosages of neuroleptic drugs to an equivalent dosage of one particular drug are suggested (Rey et al, 1989). However using this type of conversion would not have been meaningful in the present study due to unknown interactions between multiple drug regimes and due to difficulties in estimating meaningful common equivalents for different generic drugs and drugs which work on different physiological systems. This limitation is not exclusive to the present study and is perhaps of limited relevance given that no differences in information processing were observed between the two groups. Nonetheless, it warrants consideration for future research. In an ideal situation, patients would be assessed without having taken any medication, but clearly there are ethical considerations in not providing necessary pain control. Restricting the sample population to only those patients who do not take medication which is known to have an effect on information processing is likely to result in an unrepresentative sample of chronic pain patients and ungeneralisable results. A similar criticism could be levied at restricting inclusion in the study to patients who are taking drugs of the same or similar genesis (e.g. codeine based). However, this may be a necessary compromise if meaningful medication equivalents are to be estimated and an attempt made to consider possible effects of medication on information processing performance.

The findings of the study did not support the hypotheses that high pain has a greater interference effect than low pain on information processing. Within the context of the
above limitations, it is useful to discuss possible explanations for the findings. Firstly, it is possible that the TEA is not sensitive enough to detect interference effects or that the task demands are not sufficiently hard enough to highlight interference effects. This explanation seems unlikely however, as data from the standardisation sample indicates that performance on all subtests, apart from one, was normally distributed (Robertson et al, 1995). Elevator Counting was the only subtests upon which a ceiling effect was observed with normal controls. In addition the subtest of interest which loaded on the auditory-verbal working memory factor (Elevator Counting with Reversal) proved extremely difficult for the normative sample. This is reflected in the derision of scaled scores as a low raw score results in a comparatively high scaled score.

Another possible explanation for the findings is that high pain patients are able to compensate for possible interference effects and perform at a level comparable with that of low pain patients. As mentioned above comparison with a no-pain control group would enable an examination of whether or not any amount of pain (regardless of severity) results in a disruption of information processing as measured by TEA performance. If this proves to be the case, additional research to examine possible compensatory strategies would be of interest. Eccleston (1995) explored the possible compensatory strategies of low pain patients when he observed their performance to be at a comparable level with that of controls. He tested the hypothesis that pain patients were able to switch their resources between the processing of pain information and the processing of manipulated task demands. The switching hypothesis was not supported. Eccleston concluded that patients were achieving psychoanalgesia due to enough of the available processing resources being allocated to the demanding interference task and preventing pain information from being consciously processed. This has implications for the theoretical considerations of pain processing as it challenges the assumption that the processing of pain information is given precedence over other types of information.

If Eccleston’s results were replicable with a group of patients experiencing high pain there would be significant implications for clinical interventions with these patients. Eccleston has already suggested that although results of studies with low pain patients
suggest psychoanalgesia is possible, the use of distraction tasks for control of chronic pain should be carefully considered. He suggests that there are two main reasons for this. Firstly, for tasks to be effective they must employ higher order attentional skills, and such tasks by their nature are effortful and tiring to maintain. Secondly the positive effects of distraction strategies will be short lived. Given the theoretically proposed efficacy of the information processing system to automate tasks which are repeated, distraction tasks will gradually make less demands on higher order attentional skills as they become more familiar and will therefore become less effective. Despite Eccleston’s reservations about the use of cognitive distraction strategies with patients reporting low levels of chronic pain, it may be the case that the use of these strategies with high pain patients provides another useful strategy to contribute to the efforts to control intractable chronic pain.

As well as the content of intervention, possible deficits in the attentional functioning and information processing of chronic pain patients has implications for the delivery of services. The nature of chronic pain is such that it is intractable and benign. Therefore it does not fit well into a curative, medical model of health care. Increasingly, the intervention of choice is a rehabilitative programme with emphasis on pain management. Given the requirements of learning and adaptation inherent in this model of health care, possible deficits in information processing must be considered if pain management interventions are to be delivered effectively. Further research as outlined above is required to address all of these issues.
References.


ATTENTIONAL DEFICITS FOLLOWING SEVERE CLOSED HEAD INJURY AND IN CHRONIC PAIN.
A COMPARATIVE STUDY.
Abstract

Attention is a multi-faceted phenomenon. The present study aimed to compare the attentional functioning of three groups (a severely closed head injured group; n=14, a chronic pain group; n=14, and a control group; n=12) matched according to mean age and estimated premorbid general intellectual functioning. Previous literature has suggested that both clinical groups may experience compromised attentional functioning, however, findings relating to functioning across a wide range of attentional functions were equivocal. The study had three key aims; firstly to investigate whether attentional functioning breaks down differentially following severe closed head injury; secondly to investigate whether attentional functioning breaks down differentially as a result of the experience of chronic pain; thirdly, to investigate whether profiles of functioning could be suggested for each clinical group and to investigate whether suggested profiles differ from one another and from a matched control group. The clinical relevance for these enquiries is discussed. Consideration is given to the different underlying aetiologies for the clinical conditions and how this represents a possible comparison between an organic and a non-organic cause for attentional difficulties. Secondly, the implications that compromised attentional functioning may have for delivery of rehabilitative healthcare are considered. The Test of Everyday Attention was used to assess a wide range of attentional constructs, including visual, selective attention and speed of processing, attentional switching, sustained attention and higher attentional functions involved in planning and co-ordination of cognitive activities. Mood is considered as a possible confounding variable and is statistically controlled for where necessary. Multivariate statistics are calculated to compare group performances. Significant results suggest that all aspects of attentional functioning are compromised following severe closed head injury, in particular speed of processing. Chronic pain patients perform at a level comparable to normal controls on all attentional functions bar sustained attention. To investigate profiles of functioning, multi-dimensional scaling is used. Although the numbers are small, some trends were identified which suggest consistent performance profiles for subjects from each clinical group. Clinical considerations, limitations of the present study and future research requirements are discussed.
Introduction

The study of attentional abilities has great clinical relevance. The nature of the clinical conditions following head injury and in chronic pain are such that they are not best treated within a curative model of health care delivery. Rather, current treatment approaches are characterised by rehabilitation techniques and methods of adapting to a new, modified way of life. This clearly requires a collaborative approach between patients and healthcare providers as they work towards goals of adaptation and adjustment. Undoubtedly, achievement of such goals will require acquisition of new skills or reacquisition of previously learnt skills, either way the individual will need to be able to learn; to take on new information, manipulate it and integrate it with pre-existing information. Attentional abilities are mediators for learning and therefore have undeniable implications for the provision of rehabilitation care. To further our understanding of both the theory of attentional functioning and the experience of attentional abilities in clinical populations is valuable and necessary if we are to deliver care in appropriate forms.

This study aims to investigate the nature of possible attentional deficits following closed head injury and as a result of chronic pain. It has three areas of enquiry: firstly, do attentional abilities breakdown differentially following closed head injury? Secondly, do attentional abilities breakdown differentially as a result of the experience of chronic pain? Thirdly, are there differences between the attentional functioning of these two groups and can profiles of attentional functioning be proposed for these two clinical populations. The remainder of the introduction will briefly outline the theoretical models of attention, before going on to discuss the research literature on attention following head injury and attention in chronic pain and outlining the hypotheses of the present study.
Theories of attention - Cognitive models.

Attention is a complex, multi-dimensional concept. Theoretical investigations into attention have resulted in the emergence of various types of attention. For example, selective attention (the ability to select relevant information for conscious processing in favour of irrelevant information, incorporating focusing and dividing of attention as necessary), sustained attention (the ability to maintain a level of readiness over extended periods of time), alertness (the ability to prepare for response), attentional control (the capacity to plan and control attentional activities and subsequent cognitive activity according to the requirements of the situation and previous experience). These aspects of attention are not necessarily independent of each other. For example whilst driving on a long journey we need to be able to sustain our ability to select information relevant to our progress on the roads whilst ignoring irrelevant information. We need to remain alert to signals which could indicate potential danger or require action (e.g. slowing down in an area where children are playing close to the road). We need to be able to divide our attention between changing traffic scene, weather conditions and the manual activities of handling the car. Undoubtedly to prevent chaotic driving, all of this activity needs to be co-ordinated. This example illustrates that the complex behaviours and activities we engage in everyday draw heavily on many aspects of attentional ability. Theoretical investigations into attention have attempted to delineate the various aspects of attention and to provide frameworks within which we can conceptualise the manner in which these distinct aspects of attention interact.

Broadbent’s (1958) seminal work provided the basis for more recent information-processing theories of attention. Shiffrin and Schneider (1977) propose a model characterised by two forms of information processing: automatic and controlled. Automatic processing is not dependent upon conscious decision making by the individual and is therefore unlimited in its capacity. As well as the in-born processing of perceptual attributes, automaticity can be established through learning and repetitive practise of a skill (e.g. Fisk & Schneider, 1983). Tasks which require automatic information processing can be carried out simultaneously, or in parallel, without any
detriment in performance. Controlled processing requires conscious attention and as such is limited in capacity. Controlled processing is relied upon in novel and unfamiliar situations and is characterised by serial, step-wise progress at a measured rate. The model proposes that these two forms of processing can interact with each other if required by the use of a hypothetical attentional director. Automatic processing will continue as far as possible and if required the attentional director will initiate controlled processing. Through learning and practise, skills which required originally controlled processing can become familiar enough to be processed automatically.

Shiffrin and Schneider illustrate the workings of their two-process model using examples of selective attentional slips or deficits. They propose two such deficits, focused attention deficits and divided attention deficits. Focused attention deficits are characterised by interference of automatic processing upon controlled processes. For example when driving a new model of car in which the location of the indicators and windscreen wipers is reversed on the steering column, the driver will frequently turn on the windscreen wipers accidentally when trying to indicate. Action in this example is controlled by enduring dispositions acquired through repeated practice which can only be overcome by controlled processing. Divided attention deficits occur within the domain of controlled processing as a result of the interaction between the need for conscious attention and the limited capacity of the processing system. Therefore if information input or processing demands exceed the capacity of the system information will be missed or the required series of responses will not be executed. These slips commonly occur when trying to simultaneously do two activities which both require controlled processing, (e.g. trying to do mental arithmetic in a foreign language) and result in errors or marked slowing of performance.

It is suggested that higher order attentional processes such as planning and regulation of goal-directed activity are not well-accounted for within the Shiffrin & Schneider model (van Zomeren & Brouwer, 1994). Norman & Shallice (1986) propose a cognitive schema framework to account for these aspects of attentional activity. Cognitive schema theory postulates all cognitive and behavioural skills are stored in memory in schema which are triggered by appropriate internal or external cues or
conditions. However, cues and conditions for several schema may be present at any one time, which could lead to several conflicting schema being activated simultaneously, resulting in chaotic or disrupted behaviour. Norman and Shallice (1986; Shallice & Burgess, 1993) propose two mechanisms for the control of the online operation of schema; contention scheduling and supervisory attentional control.

Contention scheduling is an automatic process which serves to resolve the conflict between competing schema. It operates at the inter-schema level and activates the most appropriate schema according to task requirements and environmental cues. Once activated the schema influences the elicitability of other schema through lateral inhibition or excitation of respective incompatible and compatible schema. Schema are believed to be stored in long term memory in association networks established through previous experience, therefore contention scheduling is regarded as a “bottom up” control process adaptive in controlling routine behaviour in familiar situations.

The supervisory attentional control system (SAS) is proposed to yield “top down” control of behaviour. It requires effortful processing and is adaptive in novel situations or for execution of unfamiliar behaviour or responses. The SAS rearranges schema into new sequences which accord with the planned behaviour or task goals. It then influences the selection of schema through moderation of contention-scheduling and by providing additional activation or inhibition of schema at the lower level. As the SAS can not directly select schema and has to proceed through influencing excitability of competing schema it is possible for unintentional schema to become activated despite the involvement of SAS.

As well as providing a better explanation for the manner in which attention is controlled in order to plan activity, the cognitive schema model also incorporates better defined links with other aspects of cognitive functioning, particularly memory (where schema are stored). Another model which provides more integration between cognitive functions is the working memory model. First proposed in 1974 by Baddeley and Hitch the model of working memory is comprised of three components, the visuo-spatial sketchpad (able to hold and manipulate visuo-spatial information), the phonological loop (able to hold and manipulate verbal information) and the central executive system.
The central executive system is not involved in storage of information nor processing of information in the same way as the articulatory loop and the visuo-spatial sketchpad. Rather the central executive is concerned with planning, controlling and co-ordinating cognitive activity. In particular the central executive is required in tasks which involve planning and decision-making, in situations where automatic or well-learned processes are not running smoothly or where well-learnt tasks may interfere with a desired response in tasks which are novel, dangerous or technically difficult (Baddeley, 1986).

Baddeley acknowledges that the responsibility of the central executive is extremely similar to that of the SAS and given the relative importance of the central executive within the model, Baddeley (1993) debates whether the model would be more appropriately named “working attention” rather than working memory.

Theories of attention - Neurophysiological models.

The nature of cognitive neuropsychological models is such that they represent the secondary psychological pathways involved in cognitive functioning and as such they exist independently of anatomical structure. Within the field of neurophysiology researchers are proposing anatomically based models of attentional functioning (e.g. Stuss & Benson, 1984; Mesulam, 1981; Posner and Petersen, 1990). Drawing on evidence from electroencephalography (EEG), evoked potential studies, regional cerebral blood flow studies, brain scanning and studies of cognitive functioning, Posner and Petersen (1990) have hypothesised various anatomical subsystems of attentional functioning. They propose that attention is not the responsibility of one single anatomical area nor is it a general function of the brain as a whole. Rather they suggest that attentional functioning is carried out by a network of anatomical areas each of which is responsible for a different aspect of attentional functioning which can be specified in cognitive terms. Posner and Petersen outline three main cognitive functions of the attentional system: orienting to sensory events, detecting signals for focal processing and maintaining a vigilant or alert state. They propose three main anatomical subsystems to correlate with each function: the posterior network, the
anterior network and the vigilance network. Posner and Peterson (1990) provide a review of the data from regional cerebral bloodflow studies, from animal studies and from studies with brain-lesioned patients, which they put forward as evidence in support of their model.

It is proposed that the posterior attention network is involved in automatic or involuntary processes. Identified anatomical areas in the posterior network are the posterior parietal lobe which is responsible for disengaging attention from its previous focus, the midbrain which serves to move attention to the target area and thalamic structures which are involved in engaging attention at the new location and facilitating information reception. The anterior network is responsible for the detection of sensory or semantic events and appears to be related to voluntary control of attention. Key anatomical areas of the anterior system are proposed as the anterior cingulate gyrus, wider midline frontal areas and the supplementary motor area. The vigilance network is responsible for the preparation and maintenance of alertness. Descriptions of the anatomical areas involved in this network are looser than the posterior and anterior networks and it is suggested that the right cerebral hemisphere is particularly important in the establishment and maintenance of a vigilant state.

Attention and closed head injury.

A great deal of research activity has been directed towards the study of attentional functioning following closed head injury, although some of the findings remain equivocal. The following review will focus on studies of moderately and severely closed head injured people and will discuss the areas of attentional functioning derived from the theoretical models; selective (focused and divided) attention, sustained attention and higher attentional control.
Focused attention deficits have been examined using tasks which assess susceptibility to response interference from strong response tendencies. For example the stroop paradigm (Stroop, 1935) requires individuals to inhibit the primed and overlearned response of reading word names of colours in favour of naming the colour of ink in which words are printed. Research using the stroop paradigm has frequently found that subjects with moderate to severe closed head injuries are significantly slower on both parts of the stroop test and no significant increase in performance time is observed in response to the increased task demands of the colour-word interference task. This has been taken to suggest that closed head injuries do not increase susceptibility to response interference from strong response tendencies (Ponsford & Kinsella, 1992). In a well controlled study with large groups of well classified closed head injured subjects, Spikman et al (1996) statistically controlled for the effects of speed of information processing on stroop performance. This was regarded as providing a more sophisticated degree of control for the confounding effects of speed of processing than merely considering the difference between the priming and interference trials. Results indicated that no differential deficits remained between the head injured and control groups once speed of processing was controlled for. Stuss et al (1989) used a computerised reaction time test with similar characteristics to the stroop paradigm to assess numerous attentional functions in individuals with closed head injury. Subjects were required to choose between whether the presented stimulus was a target or nontarget according to particular predetermined visual characteristics (combination of shape, colour and line orientation within the shape). Focused attention deficits were examined by the ability to suppress an automatic response when a conflicting response was required or by the ability to ignore redundant information. Results indicated that subjects with closed head injuries were generally less able to ignore redundant information than the controls, although this finding was not wholly consistent over repeated assessments. Stuss et al (1989) concluded that impairments of focused attention were characteristic of their closed head injured groups but that variability of focused attentional functioning between assessment sessions was evidence of an inconsistent ability to compensate for focused attentional deficits. The head injured
groups in Stuss et al’s study were heterogeneous in terms of severity of injury which may raise questions about the generalisability of these results.

Using a different type of visual choice reaction time other researchers have reported focused attentional deficits in closed head injured subjects. Van Zomeren & Brouwer (1987) compared the performance of moderately to very severely closed head injured participants and of control subjects on two visual choice reaction tasks. The first task required subjects to respond by pressing one of four buttons as quickly as possible when it lit up. The second task was a distractor condition during which an irrelevant stimulus (an identical light in close proximity to target lights) appeared simultaneously with the target stimulus. Due to the high stimulus-response compatibility, participants had to inhibit the response of pressing the distractor light. The irrelevant stimuli had a significantly greater distracting effect on the closed head injured participants than the controls suggesting that the head injured subjects displayed focused attention deficits through increased susceptibility to response interference. Using computerised tests originally designed to assess attentional ability in children with attention deficit disorder, Burg et al (1995) report that individuals with closed head injury performed significantly below the level of a matched control group on a distractibility task which measured selective attention. However, the head injured group was not homogenous in terms of severity of injury and the assessments used have not been consistently used with adult populations, therefore the results from this study should be interpreted with caution. Deland et al (1992) have suggested that the increased reaction time observed in subjects with closed head injuries may be due to these subjects requiring significantly longer for controlled processing of irrelevant information before it can be discarded, rather than due to an inability to inhibit automatic responses (i.e. focused attention deficits).

Similarly equivocal results are yielded by a review of studies into divided attention deficits following closed head injury. From the Shiffrin and Schneider model divided attention deficits could be highlighted by three behavioural indicators: impaired speed of performance, impaired accuracy of performance, exaggerated effects of increasing
load or complexity upon performance. From an extensive study examining divided attentional abilities Ponsford & Kinsella (1992) concluded that subjects with closed head injuries were no less accurate than normal controls. They did report a slight detrimental effect on speed of performance with increasing load or complexity, however the most notable finding was that subjects with closed head injuries were significantly slower across all task requirements than control subjects. They concluded that the only indicator of divided attention deficits following closed head injury was compromised speed of performance. Many researchers have reported speed of performance as the only indicator of divided attention deficits (Stuss et al, 1989; van Zomeren & Brouwer, 1987; Gronwall, 1977). Statistically controlling for the effects of speed of processing, Spikman et al, (1996) found no differences between closed head injured subjects and matched controls on other indicators of divided attention deficits. Taking speed of processing as an indicator, these results can be taken as evidence of divided attention deficits following closed head injury. However, divided attention deficits are not acknowledged when accuracy of performance is used as the indicator.

Tromp and Mulder (1991) suggested that the general character of slowness implies an aspect of information processing common to all cognitive processes is affected. As almost every human activity (whether familiar or novel) is the result of continuous interplay between stored knowledge and cognitive processes, slowness of retrieval processes would be manifest in every task variable. This is consistent with information processing models of attention which espouse a distinction between automatic and controlled processing (Shallice & Norman, 1980; Shiffrin & Schneider, 1977). Access to relevant information in memory for both familiar and novel tasks will be affected. Due to familiarity, the connections between memory components for a familiar skill are well established and demonstrate more resilience to the effects of brain damage. Therefore although activation time will be increased (i.e. retrieval from memory) for familiar skills, execution of these skills will be relatively unaffected. The nature of novel tasks means that connections in memory between components of these tasks are non-existent or loosely established, therefore to make those connections requires conscious, effortful processing. Hence activation time and execution time are increased. This
model explains increased speed of processing demonstrated by individuals with closed head injuries on tasks which require automatic processing (simple choice reaction time tasks) and on tasks which appear to require controlled processing (multiple choice reaction time tasks). Tromp and Mulder (1991) support their proposals with evidence from drawing tasks. Complexity of cognitive processes and motor processes were manipulated according to the familiarity of the stimuli to be drawn. This work represents an extremely interesting area of study and draws clear theoretical links between memory and attentional functioning, however the sample sizes in Tromp and Mulder's study were relatively small and the closed head injured group represented a heterogeneous sample in terms of severity of injury. Further work with larger samples is required and the use of homogenous clinical groups would permit enquiry into the relative influence of severity of brain injury on speed of processing as a function of memory activation.

Studies of sustained attention have frequently employed time on task paradigms as a method of examining the consistency of subjects' performance over time. Ponsford & Kinsella (1992) concluded that subjects with closed head injuries were slower in making responses, however they were no less accurate than controls in decisions made and did not show an increased decrement in performance over time. No deterioration in performance (relative to controls) was observed in very severely closed head injured subjects on an hour long driving simulation task by van Zomeren et al (1988). Furthermore, van Zomeren et al (1984) report closed head injured subjects to be more alert over time than controls as measured by EEG ratings. Results which contradict the above findings are reported by Burg et al (1995). A computerised vigilance task was used which required the individual to sustain attention over a long period of time and to selectively respond only to specified, visually presented target stimuli. Results suggested the closed head injured subjects showed compromised accuracy and progressively poorer performance over time than the matched control group. The authors proposed that these results were representative of compromised ability to sustain attention over time in the closed head injured group. Compared to matched controls, Stuss et al (1989) found increased intra-individual variability in performance
both within and between repeated assessment sessions for closed head injured subjects. This represents reduced consistency of performance over extended periods of time and as such could be interpreted as compromised ability to sustain attention. Another method of assessing sustained attention is to use vigilance tasks. This requires detection of a target which occurs infrequently often in the context of distractor stimuli. Individuals with severe closed head injuries overall performance (i.e. number of targets identified) has been found to be below the performance level of controls, however patterns of performance over time tend not to differ significantly between groups (van Zomeren et al, 1984). This suggests that closed head injuries reduce overall efficiency in vigilance tasks but that this may be a chronic deficiency present at the outset of vigilance tasks and is stable over time.

The ability to plan and organise attentional abilities according to task demands have been examined following closed head injury. Ponsford & Kinsella (1992) using the Tower of London task (as described by Shallice, 1982) found that subjects with closed head injuries performed with comparable accuracy to a control group. The only difference between groups was in the speed of performance. They concluded that closed head injuries did not effect the individual’s ability to plan and organise attentional tasks, but did affect the speed with which these cognitive tasks were carried out. Slowed planning responses have been reported by other researchers (Levin et al, 1991; Tromp & Mulder, 1991; Stablum et al, 1994). Spikman et al (1996) have questioned the validity of the Tower of London Task as a measure of higher order control processes of attention. Tasks to assess higher order cognitive processes should be novel, complex and provide little structure (Lezak, 1982, 1995). Spikman et al argue that The Tower of London task provides a considerable amount of structure to subjects through provision of both the starting position and solution position, through provision of the number of moves required to achieve the solution and through provision of feedback. By contrast, Spikman et al employed the Modified Wisconsin Card Sorting Test (Nelson, 1976) to assess higher attentional functioning, claiming that subjects are required to initiate both the solution and the response strategies to perform this task successfully. Results indicated that closed head injured subjects produced
significantly more perseverative errors than control subjects on the card sorting task. This result remained after speed of information processing was statistically controlled for.

Azouvi et al (1996) used a dual task paradigm based on models of schema theory and working memory to examine the effects of closed head injury on supervisory control of attention and executive functioning. Subjects were required to simultaneously carry out two tasks which both rely on the central executive or supervisory attentional control system. The primary task was random letter generation. The effect on performance of varying generation speed was examined by pacing the task at three different rates (one letter per 1, 2, or 4 seconds). The secondary task was a card sorting task. Complexity of sorting was manipulated by increasing number of sorting alternatives (sorting cards into 1, 2, 4 or 8 categories). Speed of processing was statistically controlled for by using performance on part A of the Trail Making Test as an indicator of speed of processing. Results suggested that even when speed is controlled for, severe closed head injuries performed at significantly lower levels than matched controls on complex combinations of tasks which require planning, co-ordination and higher order attentional skills.

**Limitations of Research to date.**

Sustained research efforts have greatly increased our knowledge and understanding of attentional deficits following closed head injury. Attentional deficits following closed head injury are now widely acknowledged, however, the precise nature of these deficits remains unclear from the research evidence to date. There are various factors which make it difficult to interpret research findings and to compare between studies, including subject characteristics and factors relating to assessment paradigms.

In consideration of subject characteristics, a number of variables can be identified as important. Severity of injury has been found to be related to cognitive deficits and to
clinical outcome (Lezak, 1995) and reliable classifications systems based on severity have been developed (e.g. Russell & Smith, 1961; Jennett & Teasdale, 1974; Levin et al, 1979; McMillan et al, 1996). Alternative classifications according to clinical manifestations independent of overall severity level (i.e. similar to aphasia classification) are being suggested (Coppens, 1995) but classification according to severity continues to be the most widely recognised approach. Some studies use heterogeneous groups made up of subjects with wildly varying severity of injury which makes it difficult to draw conclusions about results. In other studies, information regarding method of measuring severity is unclear, therefore the make up of groups may differ even when one is comparing two homogenous groups of reportedly equivalent levels of severity of injury. A second consideration are variables which may influence on stage of recovery, in particular, duration since injury and age at time of injury. Both of these variables are reported as having an influence on outcome (Jennett, 1984; Eisenberg & Weiner, 1987; Lezak, 1995, Zwaagstra et al, 1996; Hetherington et al, 1996; Masson et al, 1996) yet many studies do not report this information. Although it may not be possible to recruit samples of sufficient size which are homogenous on variables of duration since injury, age at time of injury, severity of injury, it is important to report these data wherever possible so that reviewers can make meaningful interpretations about results.

Turning to considerations of assessment tools and paradigms, a number of factors can be identified which make comparisons between studies problematic. Attention is a multi-faceted construct which is extremely challenging to investigate. The operationalisation of a particular facet of attentional functioning can result in many varied types of tasks, as indicated by the extensive number of assessment paradigms used in the literature. Different tasks which aim to assess the same constructs may have different degrees of difficulty or sensitivity to the cognitive skill being sampled making it difficult to draw comparisons between studies. Allied to this is the distinction between laboratory assessment tools which may have been devised for a particular experiment (or research question) on a theoretical experimental basis and clinical tools which have been based on cognitive neuropsychological theory and have valid
psychometric properties. Again it is difficult to draw comparisons between results of studies when methodology and assessment paradigms are so varied. Furthermore, many studies only address one or two facets of attentional functioning. To consider the relative abilities and deficits of attentional functioning in closed head injured populations from the current research literature, requires comparisons between different groups of participants experiencing different experimental procedures for different isolated aspects of attentional functioning. This represents a comparison with numerous degrees of freedom.

Finally, independent confounding variables of attentional functioning have been reported, the most notable of which is probably mood disturbance (e.g. Wells Matthews, 1994; Watts, 1995). Within limited capacity information processing models of attentional functioning, the processing of irrelevant material associated with worry, anxiety or depression may compete with on-task processing thereby compromising performance. Individuals with closed head injury are not immune to mood disturbance (Prigatano, 1992, Godfrey et al, 1993), yet, measures of mood disturbance are seldom reported in studies of attention in closed head injured populations.

The question of whether attentional deficits breakdown differentially following closed head injury has not been fully answered. By using a standardised clinical assessment tool comprised of a number of subtests which sample different attentional abilities (the Test of Everyday Attention (TEA)), this study aims to address the question of whether attentional abilities breakdown differentially following head injury and whether a profile of attentional deficits can be identified on the TEA following closed head injury. Results of a pilot study carried out during standardisation of the TEA indicated that TEA is sensitive to attentional deficits following closed head injury (Robertson et al, 1995).
Attention and chronic pain.

Patients suffering from chronic pain frequently report difficulties in concentrating or increased distractibility as a result of their pain, however this clinical observation has not yet been the focus of sustained research investigation.

Walker (1971) employed a perceptual-motor task as an intended pain distractor. However her findings indicated that engagement in this task failed to increase subjects tolerance to pain caused by electrical stimulation. On examination of the effects of pain on the performance of the task however, she noted a significant effect. Walker suggested that processing of pain information and the task demands were competing for the same limited processing resources and moreover that processing of pain information took precedence over processing of the task requirements.

Applying theory of cognitive models of attention (Shiffrin and Schneider, 1977; Norman & Shallice, 1986), Eccleston (1994) suggests that processing of pain information occurs within the domain of controlled processing. The awareness of pain and thus the processing of pain information can be regarded as automatic and occurring without conscious intention. However, the noxious quality of the experience of pain makes it likely to capture attention already employed elsewhere. Therefore in cognitive terms Eccleston argues that processing of pain information occurs within the domain of controlled processing. However, Pearce and Morley (1989) did not observed any detrimental performance by subjects in pain on the stroop paradigm, compared to matched controls. Using a clinical group of chronic pain patients, Eccleston (1994) investigated the effects of pain on performance on an attentional task requiring controlled processing, (as described by Windes, 1968). Subjects were presented with single cards upon which a group of Arabic numerals of identical value were arranged in a regular pattern. In the first condition subjects were required to report the value of the numeral on the card, in the second condition, they were required to report the number of digits on the card. The interference task has similar characteristics to the stroop, requiring subjects to inhibit the dominant response of “value” in favour of the target
response of “number of digits”. Results indicated that the interference task was sensitive to information processing as all participants (control subjects and pain subjects) performed at a significantly slower rate under the interference condition. No interaction was observed between performance and the extent of reported pain.

Eccleston made the interference task more complex by presenting two cards simultaneously. Subjects were required to carry out the same degree of processing for each of the cards as in the previous task and then required to compare the cards and make a decision as to which card had the larger digit value or the larger number of digits. This more complex interference task again required controlled processing. Performance for all participants was again significantly slower for the interference task. Furthermore, patients who reported high degrees of pain did significantly worse than the patients reporting low pain and the no-pain control group, although this was only observed on the most difficult trials. Eccleston interpreted this as evidence of extreme pain processing taking precedence over the processing of other information within a model of limited attentional processing capacity. A possible alternative explanation is the possible confounding effect of mood disturbance. A relationship between mood disturbance and chronic pain is well documented (e.g. Merskey, 1986; Craig, 1989) and it seems reasonable to expect that patients experiencing high pain may have more marked mood disturbance than those experiencing low pain. The sensitivity of attentional functioning to the effects of disturbed mood is also well documented (Wells & Matthews). Mood disturbance was not well controlled for in this study, therefore mood may have accounted for a proportion of the variance observed between the groups on attentional functioning. A previously reported pilot investigation associated with the present study did not replicate Eccleston’s differential findings between high and low pain on attentional functioning.

Possible relationships between other facets of attentional functioning and pain can be hypothesised. Results from studies of regional cerebral blood flow, EEG and somatosensory event-related potentials during attention and disattention to pain, provide evidence for two neurophysiological systems of pain processing (Crawford,
The first is involved in the spatial and temporal sensory characteristics of pain perception and is associated with the parietal posterior regions of the brain. The second system is involved in the processing of comfort-discomfort information and is associated with anterior regions and structures. These are anatomically similar to two of the attentional subsystems proposed by Posner and Petersen (1990) (the posterior system being involved with engaging and disengaging attention from spatial locations, whilst the anterior system is involved in effortful attentional processing). This suggests that attentional functioning and processing of pain information may compete (at an anatomical level at least) for limited resources. It could be hypothesised that the experience of pain (processing of pain information) may interfere with a variety of attentional functioning. Limited research has been directed towards the possible disruptive effects pain may have on the range of attentional functions. This study aims to investigate whether attentional abilities breakdown differentially as a result of the experience of chronic pain.

**Comparisons of attentional deficits following closed head injury and in chronic pain.**

Attentional deficits arising in these two clinical conditions have clearly different aetiologies. Following closed head injury irreversible damage has occurred to the brain’s anatomical structure. Given the acceleration-deceleration of the brain which is characteristic of closed head injury, the damage is diffuse and often of primary (as a direct result of the impact) and secondary (as a result of the body’s physiological responses to the injury) cause.

The underlying aetiology of attentional deficits in chronic pain are not due to organic damage, although clearly a variety of brain structures are involved in the perception of pain. There is evidence to suggest that the pattern of repetitive firing along neural pain pathways can make certain neuro-receptors hyperexcitable, amplifying and extending
their responsivity to noxious pain stimulation. This can lead to increased potentiation of pain pathways and may result in long-term alterations in the structure and chemistry of cells in the pain pathways (Skevington, 1995). However, such changes are distinctly different to the structural damage observed following closed head injury.

By comparing the performance of individuals with closed head injuries with individuals in chronic pain, this study aims to explore whether a profile of attentional deficits following organic damage (as in closed head injury) is distinguishable from a profile of attentional deficits of non-organic cause on the TEA.

**Aims and Hypotheses of Present Study.**

The present study aims to address three questions. Firstly do attentional abilities breakdown differentially following severe closed head injury? Secondly, do attentional abilities breakdown differentially due to the experience of chronic pain? Thirdly, can profiles of attentional functioning be proposed for each of these two clinical conditions and can differences between profiles of attentional functioning be suggested?

To address these questions, the performance of severe closed head injured subjects, chronic pain patients and controls will be compared on the TEA. The TEA has two distinct benefits which make it appropriate for the present study. Firstly it has been developed on theoretical principles of neuropsychology. Secondly it has been standardised as a clinical tool and provides the opportunity to compare an individual’s performance on different attentional functions with the same normative reference group. This overcomes many of the limitations of previous studies. The TEA will be briefly outlined below before specific hypotheses are considered.
The Test of Everyday Attention (TEA).

The development of this recently published clinical test (Robertson et al 1994) has been guided by models of attention proposed by theorists such as Posner and Petersen (1990) and is based upon the neurophysiological principles of a number of anatomically defined subsystems of attention each of which has specific functional, or cognitive, correlates. The TEA is comprised of eight different subtests (from which ten scores can be derived) and is designed to assess a wide range of attentional functions. A brief description of each subtest and the underlying construct of attention the subtest aims to tap is outlined below (further detail is provided by Robertson et al, 1994, 1996).

Map Search provides a measure of selective attention, requiring the subject to search for predetermined symbols amongst an array of distractors. This requires active inhibition of distractors and selective activation of targets. During standardisation of the TEA, Map Search was found to load on the same factor as the Stroop test. The subtest is timed, so speed of performance contributes to derived score.

Elevator Counting requires subjects to listen to and count a series of irregularly presented tones. Based on a task found to be sensitive to the ability of patients with localised right frontal lobe lesions (Wilkins et al, 1987), Elevator Counting provides a measure of sustained attention requiring subjects to self-sustain attention during a monotonous task.

Elevator Counting with Distraction requires subjects to count low tones which ignoring higher pitched tones. During standardisation Elevator Counting with Distraction was found to load on the same factor as the PASAT (Gronwall, 1977) which tapped auditory-verbal working memory.

Visual Elevator requires subjects to count up and down in single increments according to visually presented cues. It was found to load on the same factor as the WCST and is believed to sample attentional switching ability. Two derived scores are calculated for
response accuracy and time per switch. The test is self-paced although timed by the administrator which enables speed of switching to be examined.

*Elevator Counting with Reversal* presents the same task requirements as *Visual Elevator* but stimuli are presented aurally and at a fixed rate. This subtest was found to sample auditory-verbal working memory. This was found to be the most demanding of the 8 subtests for the normal standardisation sample.

*Telephone Search* requires subjects to search for target symbols in a list of distractors. It provides a measure of selective attention. The subtest is timed and score is adjusted for accuracy.

*Telephone Search whilst Counting* combines the timed visual search for target symbols in the Telephone Search subtest with a simultaneous task of counting simple strings of aurally presented tones. Combining performance on both Telephone Search tasks provides a measure of dual task decrement as speed and accuracy are be controlled for.

*Lottery* is an auditory test in which subjects have to listen for target numbers amongst distractors. Subjects are required to self-sustain attention during a prolonged (10 minutes) monotonous task and sustained attention is measured through vigilance as targets occur infrequently.

From a factor analysis during standardisation, the TEA subtests have been found to tap four primary facets of attentional functioning (Robertson et al, 1996). The four factors are: Visual selective attention/speed (Map Search, Telephone Search); Attentional switching (Visual Elevator); Sustained attention (Lottery test, Elevator Counting, Telephone Search whilst Counting); Auditory-verbal working memory (Elevator Counting with Distraction, Elevator Counting with Reversal). Based upon previous research findings and the factor structure of the TEA, specific hypotheses relating to each of the three research questions are outlined below.
Question I - Do attentional abilities breakdown differentially following severe closed head injury?

*Visual selective attention/speed* - Previous research suggests that following closed head injury, selective attention deficits are indicated by slowed speed of processing (Ponsford & Kinsella, 1992). It is hypothesised that closed head injured subjects will demonstrate compromised performance on Map Search and Telephone Search. Previous studies have suggested that when speed is accounted for closed head injured individuals do not demonstrate a selective attention impairment (Spikman et al, 1996). Telephone Search whilst Counting accounts for speed of processing therefore it is hypothesised that closed head injured individuals will not show a dual task decrement on the Telephone Search subtests of the TEA.

*Attentional switching* - Previous research suggests that accuracy can be maintained at the cost of speed (Ponsford & Kinsella, 1992; Stuss et al, 1989). The Visual Elevator subtest is self-paced therefore it is hypothesised that the closed head injured group will perform more slowly than matched controls, however no decrement in accuracy is expected. Elevator Counting with Reversal (the auditory version of Visual Elevator) is represented at fixed rate, therefore impairments in accuracy are hypothesised as the closed head injured subjects will not be able to compensate for processing capacity limitations by slowing their speed of input and manipulation of information.

*Sustained attention* - Elevator Counting and Lottery subtests measure sustained attention through a vigilance paradigm. Following previous research (Burg et al, 1995; van Zomeren, 1984) it is hypothesised that closed head injured subjects will perform below the level of controls on both of these tasks. Another index of sustained attention is performance over time. If a deterioration in performance over time is also contributing to the closed head injured subjects performance levels, then performance on the Lottery task would be comparatively worse than performance on the Elevator Counting subtest, when compared to controls.
Auditory-verbal working memory - Previous researchers have reported deficits in higher order attentional abilities both combined with and independent of the influence of speed of processing (Azouvi et al, 1996, Spikman et al, 1996, Gronwall & Wrightson, 1974). It is hypothesised that closed head injured subjects will perform below the level of controls on both Elevator Counting with Distraction and Elevator Counting with Reversal.

Question II - Do attentional abilities breakdown differentially as a result of the experience of chronic pain?

Visual selective attention/speed - Previous research has failed to find a consistent decrement in selective attention skills in chronic pain patients (Pearce & Morley, 1986; Eccleston, 1994). It is hypothesised that chronic pain patients will perform at a level comparable to controls on Map Search and Telephone Search.

Attentional switching - Neurophysiological models suggest that pain processing and the engagement and disengagement of attention have similar anatomical locations (Crawford, 1994). It is hypothesised that processing of pain information may compete with the controlled processing required for the attentional switching tasks of the TEA (Visual Elevator and Elevator Counting with Reversal) and may compromise performance on these subtests.

Sustained attention - The Lottery test and Elevator Counting both require maintenance of a vigilant state during monotonous tasks. It is hypothesised that performance on these tasks will by disrupted due to the noxious nature of the experience of pain capturing conscious attention. Telephone Search whilst Counting however does not use a vigilance paradigm to sample sustained attention, therefore, performance on this task may not be as susceptible to disruption due to distraction caused by pain.
Auditory-verbal working memory - Previous research has suggested that the experience of pain can disrupt attentional tasks requiring higher order attentional skills if the extent of pain is exceptionally high or if task demands are extremely high. It is hypothesised that chronic pain subjects may perform below the level of controls on the more difficult task of Elevator Counting with Reversal but may not demonstrate any compromised performance on the less demanding task of Elevator Counting with Distraction.

Question III - Can profiles of attentional functioning be proposed for each of these two clinical conditions and can differences between profiles of attentional functioning be suggested?

Visual selective attention/speed - Chronic pain patients are expected to perform at a level comparable to controls. Closed head injured subjects are expected to be impaired due to their sensitivity to speed of processing.

Attentional switching - Both clinical groups are expected to perform at a level below that of the control group, however, it is hypothesised that closed head injured subjects, given their sensitivity to speed of processing, will demonstrate greater impairment than the chronic pain group.

Sustained attention - Both closed head injured subjects and chronic pain subjects are expected to perform at a level below that of control subjects on sustained attention tasks from the TEA. Differences in performance between closed head injured subjects and chronic pain subjects are not predicted.

Auditory-verbal working memory - Closed head injured subjects are expected to perform poorly on both Elevator Counting with Distraction and Elevator Counting
with Reversal. Chronic pain subjects are expected to show decrement in performance for the more demanding task of Elevator Counting with Reversal. Again closed head injured subjects are expected to perform at a lower level to the chronic pain patients.

Method

Subjects.

Fourteen (12 men, 2 women) individuals with moderate to severe closed head injuries (CHI) were recruited to the study, through rehabilitation centres and neuropsychology services. The gender mix of this sample reflects the gender mix observed in the clinical population and it was not possible to recruit a more evenly balanced mix of males and females. The criteria for inclusion included evidence of acceleration-deceleration injury; moderate to severe closed head injury with PTA > 1 day (Russell, 1971); post PTA > 1 month; no concurrent diagnosis of chronic pain, nor subjective experience of extreme pain at time of testing. There was evidence of acceleration-deceleration injury in all cases with 10 injuries sustained through road traffic accidents and 4 through falls. Mean PTA was 33 days (range = 18 - 58, SD = 15.06 days). Mean time since injury was 33.43 months (range = 6 to 120 months, SD = 40.68 months). There was no reported history of serious illness which may have caused neurological damage not associated with closed head injury (e.g. hypoxia). Mean age was 35.64 years (range =18 - 59 years, SD = 13.59 years). Mean estimate of premorbid functioning was IQ 106 (range = 85 - 124, SD = 13.39). Four closed head injured (CHI) subjects reported being on regular medication. One was taking sedative at night, one was taking an SSRI antidepressants, and two were taking anti-convulsants.

Fourteen chronic pain patients were recruited to the study (2 men, 12 women). The gender mix of this sample reflects that observed in the clinical population and it was
not possible to recruit any more males to the study who fulfilled the inclusion criteria. The criteria for inclusion included a clinical diagnosis of chronic pain characterised by chronic, benign and intractable pain (Turk et al, 1983); no history of head injury; no history of whiplash injury (i.e. possible cause of acceleration-deceleration with no head injury per se) were reported. All patients were engaged in active pain management treatment programmes, through which they were recruited. All 14 patients had low back pain, 2 had concurrent pain in the thoracic regions and 1 had history of cervical pain although this was not the location of pain at time of assessment. There was no reported history of serious illness which may have caused neurological damage. Mean duration of chronic pain was 88.79 months (range = 12 - 278 months, SD = 90.88 months). Mean age was 38.30 years (range = 24 - 60 years, SD = 10.05 years). Mean estimated premorbid functioning was IQ 104.79 (range = 90 - 122, SD = 9.09). Five pain subjects reported taking codeine based analgesics, 3 were taking NSAID analgesics and 6 were taking analgesics available over the counter. Five were also taking additional regular medication including antidepressants (SSRI and tricyclic), benzodiazepines (diazepam), hormonal treatment (thyroxine).

Twelve control subjects were recruited to the study (7 men, 5 women). It had been hoped that close relatives of participants from the two clinical groups could have participated as controls, however, this form of recruitment was unsuccessful. Controls were recruited through personal contacts of the investigator. There was no diagnosis of chronic pain, nor subjective experience of pain at time of assessment. No history of head injury, no neuropsychiatric illness nor serious physical illness which may have given rise to neurological illness. Mean age was 34.33 years (range = 20 - 58 years, SD = 13.01 years). Mean estimated premorbid functioning was IQ 109.17 (range = 97 - 120, SD = 7.68).
Measures.

1. **Attentional functioning** - *The Test of Everyday Attention (TEA)*. (Robertson et al, 1994).
   
   An outline of the TEA subtests is provided above. Further details are provided by Robertson et al (1994, 1996).
   
   The TEA was standardised using 154 normal volunteers and age-related norms are provided from 18 to 80 years stratified into 4 age bands. No effects of general intellectual functioning nor gender on TEA performance were reported for the standardisation sample (Robertson et al, 1996). Raw scores are converted to scaled scores using the tables in the test manual (Robertson et al, 1994). Scaled scores are standardised to a 19 point scale representative of a normal distribution with ±3 standard deviation range and a mean of 10. Scaled scores are published for all subtests except for Elevator Counting as this showed a ceiling effect within the normal distribution sample.
   
   The TEA has high face validity with subjects as each subtest is modelled as closely as possible on an event or task which may be carried out in real life. Subtests are acceptable to subjects and engagement is generally high.

   
   The NART has been found to be resistant to cognitive decline from the effects of diffuse brain damage (Lezak, 1995). It is therefore a suitable instrument to use with all three groups to provide an estimate of the level of premorbid general intellectual functioning.

   
   Mood disturbance is acknowledged to have an affect on attentional functioning (Wells & Matthews, 1994). Within the constraints of the present study it was not possible to screen mood disturbance as a criteria for exclusion from the study, therefore a measure
of mood disturbance was obtained in order to statistically control for the possible effects of mood disturbance on attentional functioning.

The WSRS was developed for use with neurological patients and patients with substantial physical illness. It is based purely on emotions and feelings and unlike other measures of mood disturbance does not employ items relating to activity levels, somatic complaints and cognitive disorder which may be associated with disturbed mood as these may lead to high levels of misclassification with neurologically and physically ill groups. The WSRS was selected as an appropriate measure to use with closed head injured subjects and chronic pain patients. No gender nor age effects on WSRS scores are reported in the standardisation sample.

4. **Severity of closed head injury - Measure of post traumatic amnesia.**

Post traumatic amnesia (PTA) has been found to predict psychosocial outcome including indices such as work, dependency and emotional difficulties following closed head injury (Brooks et al, 1990). As such, the duration of PTA provides a meaningful classification system for severity of injury.

Duration of PTA is taken to be the interval between injury and the recovery of continuous memory for day to day events. Information from two sources contributed to estimates of PTA duration. Prospective assessments of PTA recorded in medical notes and retrospective assessment of duration of PTA measured at time of assessment for present study. Retrospective assessment involves comparing subjects self-report of memory for events against established temporal landmarks (e.g. being taken to hospital, being in intensive care, being transferred to another ward/hospital, first birthday following injury). The format recommended by McMillan et al (1996) was used in this study. Information about temporal landmarks was gathered from medical notes or from an informant.

Russell's (1961) classification system was used to classify severity of injury according to duration of PTA, as depicted in Table 1.0
<table>
<thead>
<tr>
<th>Severity of head injury</th>
<th>Duration of PTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>&lt; 1 hour</td>
</tr>
<tr>
<td>Moderate</td>
<td>1 hour - 24 hours</td>
</tr>
<tr>
<td>Severe</td>
<td>1 day - 7 days</td>
</tr>
<tr>
<td>Very severe</td>
<td>1 week to 4 weeks</td>
</tr>
<tr>
<td>Extremely severe</td>
<td>&gt; 4 weeks</td>
</tr>
</tbody>
</table>

Table 1.0. Classification of severity of closed head injury into bands using duration of PTA.

Russell & Smith (1961)

**Procedure.**

Local Research Ethics Committee approval was gained prior to commencement of the study. All subjects participated voluntarily and following a verbal and written explanation of the rationale of the study and what it would entail, subjects were asked to sign a consent form.

Relevant background information was sought using a standard format developed by the investigator. The NART and other self-report questionnaires were introduced and completed before administration of the TEA. The order of administration remained constant for all participants. Assessment was carried out in a single session lasting approximately 1½ hours. In three cases (1 pain, 1 CHI, 1 control) this was not possible and the assessment was carried out over 2 sessions with no more than 48 hours between sessions.

Standardised administration procedure was used for all measures. In the TEA it is recommended that Elevator Counting with Reversal should not be administered to individuals with severe brain injury due to the difficult nature of the test. However, for the purposes of the present study, all subtests were introduced to all participants using the published practice items. If participants were unable to get all practice items correct on the Elevator Counting with Reversal subtest (as required according to standardised
administration), then the test items were not administered and a raw score of zero was recorded for that subtest. Due to the difficulties encountered by the normative sample group during standardisation of the TEA, a raw score of 0 does not yield a scaled score of 0. As a result of the relatively large numbers of participants who failed to get the practice items correct and to whom the test was not administered, age related scaled scores for raw scores of 0 were allocated to avoid missing data which would have greatly reduced the scope of statistical analysis for this subtest.

Results

Power analysis calculations indicated that for n=12 and α=0.05 (two tailed) statistical power of 0.70 is achieved (Howell, 1997). All statistics were performed using SPSS v7.0 for Windows 95.

Descriptive statistics.

A one-way analysis of variance was conducted with the result that no significant differences were observed between the three groups in mean age (F(2,37) = 0.494, p = 0.614), nor mean estimated premorbid intellectual functioning (NART score) (F(2,37) = 0.593, p = 0.558). Differences between groups on mean mood disturbance (WSRS score) were at borderline significance (F(2,37) = 3.128, p = 0.056).

Question I: Do attentional abilities breakdown differentially following severe closed head injury?

Analysis was considered in three stages to address this question. Firstly, a multiple analysis of variance (manova) compares the difference of the CHI group’s performance
with that of the control group. Secondly, the possible influence of mood on the manova results is considered by controlling for mood through a mancova calculation. Thirdly, a possible profile of attentional functioning is considered within the CHI group, by inspecting the mean performances of the group across the various subtests and constructs of attentional functioning.

Multiple analysis of variance (manova) was computed to compare the performance of CHI subjects with the performance of control subjects on all subtests of the TEA. The results are presented in Table 1.

<table>
<thead>
<tr>
<th>TEA subtest</th>
<th>CHI Mean</th>
<th>CHI SD</th>
<th>Controls Mean</th>
<th>Controls SD</th>
<th>F value</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Search</td>
<td>5.07</td>
<td>4.51</td>
<td>12.08</td>
<td>2.23</td>
<td>23.84</td>
<td>.000</td>
</tr>
<tr>
<td>Elev. Count.</td>
<td>6.29</td>
<td>1.20</td>
<td>7.00</td>
<td>0.00</td>
<td>4.20</td>
<td>.052</td>
</tr>
<tr>
<td>Elev. Count. with Distraction</td>
<td>8.14</td>
<td>3.32</td>
<td>11.25</td>
<td>2.49</td>
<td>7.06</td>
<td>.014</td>
</tr>
<tr>
<td>Visual Elev.(accuracy)</td>
<td>7.71</td>
<td>4.55</td>
<td>11.25</td>
<td>2.26</td>
<td>5.96</td>
<td>.022</td>
</tr>
<tr>
<td>Visual Elev.(switching speed)</td>
<td>5.57</td>
<td>5.05</td>
<td>10.50</td>
<td>2.02</td>
<td>10.01</td>
<td>.004</td>
</tr>
<tr>
<td>Elev. Count. with Reversal</td>
<td>5.50</td>
<td>4.77</td>
<td>10.83</td>
<td>2.33</td>
<td>12.42</td>
<td>.002</td>
</tr>
<tr>
<td>Telephone Search</td>
<td>5.64</td>
<td>4.34</td>
<td>10.58</td>
<td>1.78</td>
<td>13.51</td>
<td>.001</td>
</tr>
<tr>
<td>Telephone Search dual task</td>
<td>7.42</td>
<td>4.27</td>
<td>9.83</td>
<td>3.24</td>
<td>2.54</td>
<td>.124</td>
</tr>
<tr>
<td>Lottery</td>
<td>7.29</td>
<td>3.60</td>
<td>11.75</td>
<td>2.42</td>
<td>13.26</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 1. Performance means and standard deviations of severe closed head injured subjects and controls on TEA subtests, with F values and significance levels following Manova comparisons.

A significant main effect of group was observed (F(1,24) = 1.88, p = .034), indicating that the CHI were performing at a level significantly below that of the control group. Inspection of the univariate statistics provides information about the CHI performance...
across different domains of attentional functioning relative to the performance of the control group. These statistics are summarised below.

**Visual selective attention/speed** - The hypothesis that CHI would demonstrate impaired performance on visual selective attention is supported, as indicated by their significantly lower mean performance on Map Search ($F(1,24) = 23.84, p = .000$) and Telephone Search ($F(1,24) = 13.51, p = .001$). No significant difference was observed between controls and CHI subjects on the dual task of Telephone Search whilst Counting ($F(1,24) = 2.54, p = .124$). This supports the hypothesis that CHI subjects do not show a decrement in performance once speed of processing is accounted for.

**Attentional switching** - CHI were significantly slower than controls on Visual Elevator (switching speed) task ($F(1,24) = 10.01, p = .004$). This supports the hypothesis that CHI would take significantly longer to accommodate a switch in attention on this subtest. The hypothesis that speed is compromised (as indicated by longer switching time) in order to maintain accuracy was not supported. The CHI subjects were significantly less accurate on Visual Elevator than controls ($F(1,24) = 5.96, p = .022$).

**Sustained attention** - The hypothesis that CHI subjects would demonstrate poor vigilance skills is supported by their significantly lower scores on Lottery tasks ($F(1,24) = 13.26, p = .001$) relative to controls. The CHI group’s mean score on Elevator Counting subtest was less than that of the control group, and the difference was approaching significance, ($F(1,24) = 4.20, p = .052$). The CHI subjects performed at a poorer level on the Lottery task than on Elevator Counting relative to controls. One possible explanation for this is a deterioration over time in the CHI group’s performance as measured by the extended time demands of the lottery task. No significant difference was observed between the CHI group and control group on the dual task subtest of Telephone Search whilst Counting ($F(1,24) = 2.54, p = .124$). Whereas CHI subjects may be less able than control subjects at the unitary task of sustaining attention on vigilance tasks, the Telephone Search whilst Counting result may suggest that CHI subjects are no less able than control subjects at sustaining attention to auditory stimuli whilst simultaneously carrying out a visual search task. In
addition the derivation of the dual task decrement controls for speed of processing which often contributes to differences between CHI subjects’ performance and control subjects’ performance.

*Auditory-verbal working memory* - CHI subjects performed at a level significantly below that of the control group on Elevator Counting with Distraction ($F(1,24) = 7.06, p = .014$) and Elevator Counting with Reversal ($F(1,24) = 12.42, p = .002$). These results support the hypothesis that CHI subjects demonstrate compromised higher order attentional functioning associated with these tasks.

**Controlling for mood disturbance.**

From descriptive statistics, differences between the groups in degree of self-reported mood disturbance approaches significance ($F(2,37) = 3.128, p = .056$). Post-hoc comparisons were carried out to further explore differences between the groups on mood disturbance. Fisher’s least significant difference (LSD) test was used to make pairwise comparisons between the three groups. The only significant difference was observed between the CHI group and the control group ($p = .021$).

The relationship of mood disturbance and disruption to cognitive functioning and attentional abilities is well-recognised (Wells & Matthews, 1990). Pearson product moment correlation coefficients were calculated to examine the relationship between mood disturbance (WSRS scores) and attentional functioning (TEA subtest scores) within the current sample. The results are presented in Table 2.
<table>
<thead>
<tr>
<th></th>
<th>Correlation coefficient</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Search</td>
<td>-.467</td>
<td>.002</td>
</tr>
<tr>
<td>Elev. Count.</td>
<td>-.249</td>
<td>.121</td>
</tr>
<tr>
<td>Elev. Count. with Distraction</td>
<td>-.372</td>
<td>.018</td>
</tr>
<tr>
<td>Visual Elev. (accuracy)</td>
<td>-.364</td>
<td>.021</td>
</tr>
<tr>
<td>Visual Elev. (switching speed)</td>
<td>-.431</td>
<td>.006</td>
</tr>
<tr>
<td>Elev. Count. with Reversal</td>
<td>-.468</td>
<td>.002</td>
</tr>
<tr>
<td>Telephone Search</td>
<td>-.395</td>
<td>.012</td>
</tr>
<tr>
<td>Telephone Search dual task</td>
<td>-.331</td>
<td>.037</td>
</tr>
<tr>
<td>Lottery</td>
<td>-.402</td>
<td>.010</td>
</tr>
</tbody>
</table>

Table 2. Pearson product moment correlation coefficients and significance levels for relationship between WSRS and TEA subtests.

Mood disturbance was found to correlate negatively with all TEA subtest, indicating a relationship between high mood disturbance and poorer attentional functioning. The correlation coefficients reached significance for nine of the 10 subtests, the only exception being Elevator Counting.

Due to the observed significant negative correlations (Table 2) and the significant difference between mean WSRS scores of the closed head injured group and the control group, multiple analysis of variance comparing the closed head injured group and the control group was repeated. WSRS score was entered as a covariate, thereby controlling for the effects of mood disturbance on attentional functioning. Results are presented in Table 4.

When mood is controlled for, no overall significant difference is observed between the performance of the two groups (F(1,23) = 1.48, p = .104). However examination of the univariate F statistics indicates that five of the seven significant differences reported in Table 1, remain.
### Table 4. Mancova, covarying mood, of performance of severe closed head injured subjects and controls on TEA.

<table>
<thead>
<tr>
<th>TEA subtest</th>
<th>CHI Mean</th>
<th>CHI SD</th>
<th>Controls Mean</th>
<th>Controls SD</th>
<th>F value</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Search</td>
<td>5.07</td>
<td>4.51</td>
<td>12.08</td>
<td>2.23</td>
<td>16.56</td>
<td>.000</td>
</tr>
<tr>
<td>Elev. Count.</td>
<td>6.29</td>
<td>1.20</td>
<td>7.00</td>
<td>0.00</td>
<td>3.06</td>
<td>.094</td>
</tr>
<tr>
<td>Visual Elev. (accuracy)</td>
<td>7.71</td>
<td>4.55</td>
<td>11.25</td>
<td>2.26</td>
<td>1.80</td>
<td>.193</td>
</tr>
<tr>
<td>Visual Elev. (switching speed)</td>
<td>5.57</td>
<td>5.05</td>
<td>10.50</td>
<td>2.02</td>
<td>4.54</td>
<td>.044</td>
</tr>
<tr>
<td>Elev. Count. with Reversal</td>
<td>5.50</td>
<td>4.77</td>
<td>10.83</td>
<td>2.33</td>
<td>6.90</td>
<td>.015</td>
</tr>
<tr>
<td>Telephone Search</td>
<td>5.64</td>
<td>4.34</td>
<td>10.58</td>
<td>1.78</td>
<td>8.51</td>
<td>.008</td>
</tr>
<tr>
<td>Telephone Search dual task</td>
<td>7.42</td>
<td>4.27</td>
<td>9.83</td>
<td>3.24</td>
<td>0.66</td>
<td>.425</td>
</tr>
<tr>
<td>Lottery</td>
<td>7.29</td>
<td>3.60</td>
<td>11.75</td>
<td>2.42</td>
<td>7.23</td>
<td>.013</td>
</tr>
</tbody>
</table>

**Visual selective attention/speed** - When mood is controlled, significant differences remain between CHI group’s performance and controls’ on Map Search ($F(1, 23) = 13.90, p = .001$) and Telephone Search ($F(1,23) = 8.51, p = .008$). CHI subjects are not significantly worse than controls on the dual task of Telephone Search whilst Counting ($F(1,23) = 0.66, p = .425$). These results are consistent with manova results presented in Table 1.

**Attentional switching** - When mood disturbance is controlled for, CHI subjects perform more slowly than controls on the Visual Elevator task ($F(1,23) = 4.54, p = .044$), although they are no less accurate ($F(1,23) = 1.80, p = .193$). This pattern of results is not consistent with that of the manova presented in Table 1 and suggests that accuracy is negatively affected by mood disturbance. The results from the mancova (Table 4) support the original hypothesis that speed of performance may be sacrificed to maintain accuracy.
Sustained attention - The significant difference between CHI and control subjects on Lottery task remains once mood has been accounted for (F(1,23) = 7.22, p = .013) suggesting that compromised vigilance skills exist independent of mood effects.

Auditory-verbal working memory - When mood is controlled for the difference between the performance of the CHI and control subjects on Elevator Counting with Distraction is no longer significant (F(1,23) = 3.62, p = .070), although the mean performance for the CHI is lower than that of the control group. On the more demanding task of Elevator counting with Reversal, the significant difference remains (F(1,23) = 7.23, p = .013).

In summary, controlling for mood has the effect of reducing all the F values in the multivariate analysis when comparing mean performances between the control and CHI groups. This indicates that mood accounts for some of the variance between the groups' performances. Nonetheless, many of the significant differences remain, indicating that CHI subjects have attentional deficits relative to performance of control subjects, which are independent of the effects of mood on attentional functioning.

Differences within CHI group performance.

Table 6 presents the mean performance scores for the CHI group's performance on the TEA organised by the proposed factors underlying the subtests (from Robertson et al 1996). Elevator Counting was omitted as no scaled scores are available for this subtest. Visual Elevator (switching speed) has been presented with the other subtests which sample speed. It is presented in parenthesis as it is not reported to load on this or any other factor by Robertson et al (1996).
Table 6. Mean and standard deviation of CHI group performance on TEA subtests organised by subtest factors.

Inspection of the mean subtest scores suggest that the CHI have generally weaker visual selective attention / speed abilities compared to other attentional skills. The low score for Elevator Counting with Distraction may also suggest a weakness of auditory-verbal working memory. Large standard deviations indicate that there is also a substantial amount of inter-subject performance variability within this group of CHI subjects.

**Question II:** *Do Attentional abilities breakdown differentially as a result of chronic pain?*

Multiple analysis of variance (manova) was computed to compare the performance of chronic pain subjects with the performance of control subjects on all subtests of the TEA. Results are presented in Table 7.
Table 7. Performance means and standard deviations for chronic pain subjects and controls on TEA subtests, with F values and significance levels following manova comparisons.

A significant main effect of group was observed ($F(1,24) = 3.19$, $p = .021$) indicating an overall difference between the two groups’ performance on the TEA, with chronic pain patients performing below the overall level of the control subjects. Inspection of the univariate F statistics indicated that the chronic pain group performed below the level of the control group on all subtests except for Telephone Search. However, only the difference between chronic pain patients and controls on the Lottery task reached significance. The univariate statistics are detailed below.

**Visual selective attention/speed** - As hypothesised, chronic pain patients performed at a level comparable to that of control subjects on Map Search ($F(1,24) = 0.97$, $p = .335$) and on Telephone Search ($F(1,24) = 0.87$, $p = .359$).

**Attentional switching** - No significant differences were observed between the chronic pain group and the control group on the accuracy index of the Visual Elevator ($F(1,24) = 0.78$, $p = .385$), nor the speed of switching index ($F(1,24) = 2.48$, $p = .128$). This
does not support the hypothesis that pain processing may interrupt flexible attentional switching due to shared resources to simultaneously process pain and task demands.

**Sustained attention** - No significant difference was observed between the chronic pain group and the control group on the Elevator Counting task \(F(1,24) = 1.84, p = .187\) which taps vigilance skills. However, the chronic pain group were found to perform significantly below the level of the control group on the Lottery task \(F(1,24) = 8.02, p = .009\) suggesting an impairment of sustained attention. The Lottery task taps vigilance skills conducted over a prolonged time period. This result may indicate that chronic pain patients have difficulty in sustaining performance over time.

**Auditory-verbal working memory** - The mean chronic pain group score on Elevator Counting with Distraction was below that of the control group, however this difference did not reach significance \(F(1,24) = 2.45, p = .130\). On Elevator Counting with Reversal, the chronic pain group mean score was below that of the control group, this difference approached significance \(F(1,24) = 3.95, p = .059\). The hypothesis that chronic pain patients may demonstrate compromised functioning of higher order attentional skills is not supported by these results.

**Differences within chronic pain group performance.**

To explore relative strengths and weaknesses within the chronic pain group, mean subtest scores were inspected. Table 8 presents the mean performance scores for the chronic pain group on the TEA subtests. The subtests have been organised according to their proposed underlying factors (from Robertson et al 1996). Elevator Counting was omitted as no scaled scores are available for this subtest. Visual Elevator (switching speed) has been presented with the other subtests which sample speed. It is presented in parenthesis as it is not reported to load on this or any other factor by Robertson et al (1996).
<table>
<thead>
<tr>
<th>Factor</th>
<th>TEA subtest</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Visual Selective Attn./speed</td>
<td>Map Search</td>
<td>10.79</td>
<td>4.06</td>
</tr>
<tr>
<td></td>
<td>Telephone Search</td>
<td>11.36</td>
<td>2.34</td>
</tr>
<tr>
<td></td>
<td>(Vis. Elev. switching speed)</td>
<td>8.86</td>
<td>3.08</td>
</tr>
<tr>
<td>2. Attentional switching</td>
<td>Visual Elevator (accuracy)</td>
<td>10.21</td>
<td>3.47</td>
</tr>
<tr>
<td>3. Sustained Attention</td>
<td>Lottery</td>
<td>9.00</td>
<td>2.51</td>
</tr>
<tr>
<td></td>
<td>Telephone Search (dual task)</td>
<td>9.71</td>
<td>3.41</td>
</tr>
<tr>
<td></td>
<td>Elev. Count with Reversal</td>
<td>8.57</td>
<td>3.30</td>
</tr>
</tbody>
</table>

Table 8. Mean and standard deviation of chronic pain group performance on TEA subtests organised by subtest factors.

From inspection of the mean subtest scores, chronic pain patients' lowest score relates to the more demanding Elevator with Reversal subtest, which samples auditory working memory, followed by Visual Elevator (switching speed) and then Lottery task (sustained attention). No clear trends for relative strengths or weaknesses within the chronic pain group are observable from inspection of the mean scores.

**Question III:** Are there differences between the attentional abilities following closed head injury and in chronic pain? Can profiles of attentional ability be suggested for the three groups and how might these profiles differ?

In response to the first question, a manova was carried out to compare the mean performances of the chronic pain group and the CHI group. Results are presented in Table 9. No overall differences between groups were established from manova calculations (F(1,26) = 0.92, p = .199). The CHI group performed consistently below
the level of the chronic pain group. Inspection of the univariate F statistics indicates significant differences between performances for particular subtests.

<table>
<thead>
<tr>
<th>TEA subtest</th>
<th>Chronic pain Mean</th>
<th>CHI Mean</th>
<th>F value</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SD</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Map Search</td>
<td>10.79</td>
<td>5.07</td>
<td>12.40</td>
<td>.002</td>
</tr>
<tr>
<td>Elev. Count.</td>
<td>6.86</td>
<td>6.29</td>
<td>2.89</td>
<td>.101</td>
</tr>
<tr>
<td>Elev. Count. with Distraction</td>
<td>9.71</td>
<td>8.14</td>
<td>2.00</td>
<td>.169</td>
</tr>
<tr>
<td>Visual Elev. (accuracy)</td>
<td>10.21</td>
<td>7.71</td>
<td>2.68</td>
<td>.114</td>
</tr>
<tr>
<td>Visual Elev. (switching speed)</td>
<td>8.86</td>
<td>5.57</td>
<td>4.32</td>
<td>.048</td>
</tr>
<tr>
<td>Elev. Count. with Reversal</td>
<td>8.57</td>
<td>5.50</td>
<td>3.93</td>
<td>.058</td>
</tr>
<tr>
<td>Telephone Search</td>
<td>11.36</td>
<td>5.64</td>
<td>18.78</td>
<td>.000</td>
</tr>
<tr>
<td>Telephone Search dual task</td>
<td>9.71</td>
<td>7.42</td>
<td>2.45</td>
<td>.130</td>
</tr>
<tr>
<td>Lottery</td>
<td>9.00</td>
<td>7.29</td>
<td>2.13</td>
<td>.156</td>
</tr>
</tbody>
</table>

Table 9. Manova of performance of chronic pain group and closed head injured group on TEA.

**Visual selective attention/speed** - The CHI group performed at a level significantly below that of the chronic pain group on both Map Search ($F(1,26) = 12.40, p = .002$) and Telephone Search ($F(1,26) = 18.78, p = .000$). This supports the hypothesis that this group of CHI subjects are significantly more sensitive to slowed speed than chronic pain patients.

**Attentional switching** - As hypothesised, the CHI group demonstrated a significantly slower rate of attentional switching on the Visual Elevator task than the chronic pain group ($F(1,26) = 4.32, p = 0.048$). Although the mean accuracy score of the CHI group was less than that of the chronic pain group, this difference did not reach significance ($F(1,26) = 2.68, p = .114$).
**Sustained attention** - Although both chronic pain and CHI subjects performed significantly below the level of controls on subtests of sustained attention, there were no significant differences observed between the two clinical groups.

**Auditory-verbal working memory** - No significant differences were observed between the two groups' performances on Elevator Counting with Distraction ($F(1,26) = 2.00$, $p = .169$) nor on Elevator Counting with Reversal ($F(1,26) = 3.93$, $p = .058$). However this latter $F$ statistic was approaching significance.

**Differences between performance of all three groups.**

A mancova controlling for mood disturbance was carried out to explore differences in functioning between the three groups. Results are presented in Table 10.

Inspection of the means suggest that the CHI group are performing at a markedly lower level than that of the other two groups on all subtests. To further explore possible relationships between the three groups in terms of test performance, an exploratory multidimensional scaling analysis was run.

<table>
<thead>
<tr>
<th>TEA subtest</th>
<th>CHI Mean</th>
<th>SD</th>
<th>Chronic pain Mean</th>
<th>SD</th>
<th>Controls Mean</th>
<th>SD</th>
<th>F value</th>
<th>Sig. of F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>5.07</td>
<td>4.51</td>
<td>10.79</td>
<td>4.06</td>
<td>12.08</td>
<td>2.23</td>
<td>8.61</td>
<td>.001</td>
</tr>
<tr>
<td>EC</td>
<td>6.29</td>
<td>1.20</td>
<td>6.86</td>
<td>0.36</td>
<td>7.00</td>
<td>0.00</td>
<td>2.30</td>
<td>.114</td>
</tr>
<tr>
<td>ECD</td>
<td>8.14</td>
<td>3.32</td>
<td>9.71</td>
<td>2.49</td>
<td>11.25</td>
<td>2.49</td>
<td>2.15</td>
<td>.131</td>
</tr>
<tr>
<td>VE1</td>
<td>7.71</td>
<td>4.55</td>
<td>10.21</td>
<td>3.47</td>
<td>11.25</td>
<td>2.26</td>
<td>1.71</td>
<td>.195</td>
</tr>
<tr>
<td>VE2</td>
<td>5.57</td>
<td>5.05</td>
<td>8.86</td>
<td>3.08</td>
<td>10.50</td>
<td>2.02</td>
<td>3.47</td>
<td>.042</td>
</tr>
<tr>
<td>ECR</td>
<td>5.50</td>
<td>4.77</td>
<td>8.57</td>
<td>3.30</td>
<td>10.83</td>
<td>2.33</td>
<td>3.94</td>
<td>.028</td>
</tr>
<tr>
<td>TS</td>
<td>5.64</td>
<td>4.34</td>
<td>11.36</td>
<td>2.34</td>
<td>10.58</td>
<td>1.78</td>
<td>10.31</td>
<td>.000</td>
</tr>
<tr>
<td>TSC</td>
<td>7.42</td>
<td>4.27</td>
<td>9.71</td>
<td>3.41</td>
<td>9.83</td>
<td>3.24</td>
<td>0.80</td>
<td>.459</td>
</tr>
<tr>
<td>LOT</td>
<td>7.29</td>
<td>3.60</td>
<td>9.00</td>
<td>2.51</td>
<td>11.75</td>
<td>2.42</td>
<td>4.96</td>
<td>.012</td>
</tr>
</tbody>
</table>

Table 10. Means, standard deviations and $F$ statistics from a mancova (controlling for mood disturbance) comparing test performance between the three groups.
Spatial representation of subjects according to test performance.

Results from the multivariate analyses suggest that group differences in attentional functioning can be proposed between the three groups. An alternative way of exploring the data is to use multidimensional scaling (MDS). MDS permits relationships between cases to be represented spatially. Cases judged experimentally to be similar to each other will be close to each other on a spatial map, whereas cases judged to be dissimilar will be distant from each other (Schiffman et al, 1983). Output is in the form of a spatial map and analysis requires visual judgements to be made about relative proximities and distances between cases.

In the present study, group membership is defined according to clinical diagnosis. If there is a relationship between group membership (clinical diagnosis) and attentional functioning, cases from the same group will cluster together in the two dimensional spatial representation.

Using Alscal function on SPSS v7.0 for Windows 95, a multidimensional scalogram was produced for all 40 participants in the present study. This is presented in Figure 1. The Kruskal stress value =0.107 and RSQ = 0.956 for the scalogram indicate that the data are well represented in two dimensions.
Figure 1. Two dimensional scalogram representing proximities of all 40 participants according to test performance on TEA.

Cases have been colour coded to aid visual inspection:
- □ Closed head injured subjects
- ○ Chronic pain subjects
- ▲ Control subjects

From visual inspection, it is proposed that the space can be divided into 4 regions. The majority of closed head injured subjects are in close proximity and cluster together in an isolated region of the scalogram. This suggests close associations between the test performance of these subjects and could indicate a reasonably consistent profile of attentional functioning for the majority of the closed head injured subjects in this study.

A further isolated region defines proximities between 6 of the chronic pain patients. This suggests similar profiles of attentional functioning (on the TEA) for this subgroup of chronic pain patients.
All the control participants cluster together within one region, however, the remainder of the chronic pain patients are also represented within this spatial region. This can be interpreted as representing a close association between the attentional functioning of these chronic pain patients and the control subjects.

The multidimensional scalogram suggests trends towards a profile of attentional deficits for the closed head injured subjects. The chronic pain patients are more widely dispersed, although a subgroup of 6 pain patients are represented in close proximity in an isolated region, which may suggest consistencies in attentional functioning for these 6 chronic pain patients which is qualitatively distinct from the majority of closed head injured subjects and all of the control subjects.

**Discussion**

The discussion will be organised according to the three areas of enquiry that the study aimed to address and theoretical and clinical implications of the findings will be discussed. Limitations of the study will be considered and clinical implications of the study’s findings will be suggested.

**Closed head injuries and attention.**

The first area of enquiry addressed by the present study was whether attentional abilities breakdown differentially following severe closed head injury. The context for this enquiry was equivocal findings from previous literature. Possible reasons for these equivocal results were proposed to include problematic comparisons between different experimental paradigms, heterogeneous samples and assessment of single facets of attentional functioning. The present study sought to overcome these limitations by using a published and validated clinical assessment tool. This tool, based on sound
neuropsychological principles offers normative results and the opportunity to assess a range of attentional skills. A homogenous sample of severely closed head injured subjects was used. In addition mood disturbance was accounted for which is seldom reported in other studies and yet is recognised to influence attentional functioning (Wells & Matthews, 1994).

Analysis comprised three stages. Firstly, multiple analysis of variance indicated that differences existed between the CHI group performance and the control group performance on all four of the underlying constructs of attention sampled by the TEA. The possible influence of mood on attentional functioning was explored within the current sample and as predicted from existing literature (Well & Matthews, 1994) mood disturbance was found to have a detrimental effect on attentional functioning. The CHI reported higher levels of mood disturbance than the control group (the difference between the groups being at borderline significance) therefore further multiple analysis of variance were carried out controlling for mood disturbance.

Results from the initial manova indicated that the CHI group were performing at a level significantly below that of the control group on 7 of the 9 subtests. This represented compromised functioning on all four of the underlying constructs of attention which the subtests sample. When mood is controlled for, the CHI group are observed to perform below the level of the control group on 5 of the 9 subtests. This indicates that mood accounts for some of the variance between the groups’ performance on one of the auditory-verbal working memory tasks and also that accuracy on an attentional switching task is negatively effected by mood. However, even when mood disturbance is statistically controlled for, results support the hypotheses that all facets of attentional functioning are sensitive to the effects of severe closed head injury. The CHI group performed significantly below the level of the control group on all four factors tapped by the TEA; auditory-verbal working memory, attentional switching, sustained attention and selective visual attention. These results support theoretical proposals of deficits in head inured subjects at several levels of control of information processing. Within Shiffrin and Schneider’s model, divided attention deficits were observed as
indicated by slowed speed. Poor accuracy despite slowed speed on the visual attentional switching may also be suggestive of a divided attentional deficit due to increased task demands. Compromised ability to sustain attention was observed through poor performance on vigilance tasks, however ability to sustain attention when prompted whilst simultaneously carrying out an additional task was not compromised. Deficits in higher attentional functioning were also indicated by poor functioning on the tasks which tap auditory-verbal working memory.

Sensitivity to speed and higher attentional functioning were particularly clear given the CHI group's performance on those TEA subtests which loaded on auditory-verbal working memory and visual selective attention. This is in keeping with previous research findings (Ponsford & Kinsella, 1992; van Zomeren & Brouwer, 1987; Stuss et al, 1989). The present results may also be in keeping with recent work which has found that deficits in higher attentional control and planning exist independent of speed deficits (Spikman et al., 1996; Azouvi et al, 1996). The finding that despite slowed speed the CHI group were also significantly less accurate on a switching task may support these proposals.

Attention and chronic pain.

A second area of enquiry addressed attentional abilities in chronic pain patients. This was conducted in the context of a sparse literature base. Neurophysiological models and neuropsychological models provided a framework for guiding hypotheses. At a neurophysiological level it is proposed that pain processing and attentional processing share similar brain structures (Crawford 1994). Whilst it is acknowledged that to establish associations of brain functions is more difficult than to establish dissociations (McCarthy & Warrington, 1990) the neurophysiological models could be taken to suggest a higher risk of disturbance to attentional functioning during the experience of chronic pain. Skills related to engaging and disengaging attention and higher attentional control may have been at particular risk as these are the cognitive functions associated
with the posterior and anterior attentional systems (Posner & Petersen, 1990) and are the same regions implicated in processing of pain information (Crawford, 1994).

At a neuropsychological level, it was suggested that pain information competes for limited processing capacity with other information. It can be regarded as adaptive for pain information to be able to capture attention employed elsewhere. Indeed the nature of the warning of potential or actual tissue damage conveyed by pain information could be seen as being consistent with the type of information processed by higher order attentional systems such as the SAS. It was hypothesised that chronic pain would disrupt performance on many of the TEA subtests.

Results did not support these hypotheses. Pain patients were found to perform at a level comparable to that of control subjects on all bar one of the subtests. Chronic pain patients performed significantly below the level of controls subjects on sustained attention. Possible explanations for these findings are that chronic pain does not interfere with wide ranging attentional ability. Alternatively it could be that chronic pain patients are able to employ effective compensatory strategies. Van Zomeren & Brouwer (1984) suggest, from their unexpected findings of CHI subjects' performance not being significantly below the level of controls, that CHI subjects were employing effective compensatory strategies and were able to muster resources to match short term task demands. This is a possible explanation for the performance of the chronic pain patients in this study. Many of them have been experiencing pain for many years of their lives (some for all of their adult lives), they also seem to have good insight into likely difficulties with concentration With good insight and many years of experience, pain patients may have developed good compensatory strategies.

The sustained attention deficit could be explained by fatigue effects. The task which differentiated pain patients from controls was the final task in an assessment lasting 1½ hours. Given the hypothesis about compensatory strategies it could be the case that at the end of the assessment session, chronic pain patients were experiencing elevated levels of discomfort or fatigue, associated with sitting in one position and attending for
such a long period. Under these conditions compensatory strategies may no longer have been as effective.

**Differential profiles of attentional ability.**

The third area of enquiry was to explore possible profiles of attentional deficits for each group. If different profiles were expressed these could be associated with the different underlying aetiologies observed between the two groups. In a clinical setting, knowledge of profiles of performance could contribute to the challenging task of distinguishing between cognitive deficits of functional or organic cause.

Differences were observed between closed head injured subjects and chronic pain subjects, with CHI subjects performing at a level significantly below that of the pain patients on attentional switching tasks, speed related tasks and sustained attention. Using multidimensional scaling as an exploratory technique, spatial relationships between the data were investigated. This suggested that the majority of CHI subjects demonstrated similar test performances on the TEA as indicated by their close proximity on the spatial map. Moreover they clustered in an isolated spatial region indicating that they were not closely associated with the chronic pain patients or the control patients in terms of attentional functioning. This could be indicative of a different profile of attentional functioning, although is more likely to reflect the significantly lower levels of functioning across all tests rather than a qualitatively different profile across subtests. Pain patients were more widely dispersed, although a subgroup was observed to cluster in isolated space which again is suggestive of commonalities amongst these patients’ test performances. Trends in inter and intra group performance can be suggested from multidimensional scaling, although numbers are too limited to draw significant conclusions. Further research with larger samples would be of interest to examine these trends further. It would also be of interest to use a less severely head injured sample. The majority of the sample in the present study met criteria for classifications of very severely injured (in terms of duration of PTA). This
degree of severity may mask more subtle differences in attentional functioning which could be observed between clinical groups with and without organic aetiology.

**Limitations of the present study.**

A number of limitations of the present study warrant discussion. Groups were matched according to mean age and premorbid general intellectual functioning. However the standard deviations of these variables were quite large particularly for age. Ideally subjects would be matched on a case by case basis however this was not possible given the time constraints of the present study and the relatively small sample populations from which subjects were being drawn. Although a methodological weakness it is suggested that this will have had little impact as the data of interest (TEA) is corrected for age. Similar concerns could be raised about gender mix between groups which are exactly reversed in the two clinical groups. This reflects the gender mix found clinically within these populations thus it was not possible to recruit a more balanced gender mix for these groups. The observed gender mix in each group may provide a more appropriate and ecologically valid group composition than a more evenly balanced gender mix. Additionally no gender effects are observed on any of the measures used.

The CHI group was homogenous in terms of severity however there were notable variations within the group in terms of age at time of injury and duration since injury. It is currently debated as to the extent these two factors have on the course of recovery from and outcome of severe closed head injuries (e.g. Wilson et al, 1991; Brooks et al, 1987, Zwaagstra et al, 1996). The particularly large variations could have introduced additional unexpected variance into the data. However given the relatively abundant evidence that severity of injury is related to cognitive deficits (e.g. Masson et al, 1996; Lezak, 1995) a decision was made to ensure group homogeneity on the severity variable even if this meant increasing the variance on other indices.

Similarly, homogeneity of the pain group in terms of extent of pain could be questioned. Measurement of pain is an area fraught with complications beyond the
scope of the present study. However in a previously reported pilot study (this volume) extent of pain was not found to have an effect on information processing within this sample group.

Accounting for the effects of medication poses a challenge to all research in this field and this study is no exception. Within this study it was not possible to establish equivalent dosages of a common drug (as suggested in other fields, Rey et al, 1989) given the unknown interactions of multiple drug regimes, the differing generic bases of the medications in question and their different routes of action. However it is acknowledged that many of the medications being taken by the participants have been assessed as having an effect on information processing, cognitive functioning and arousal (Ashton, 1983; Trimble & Thompson, 1983). All of the above limitations can be used beneficially and accommodated in future research.

Finally it is necessary to note that the sample sizes are relatively small. Statistical power of at least 0.70 is achieved with the sample sizes observed. This implies that there is a 70% chance of appropriately rejecting the null hypothesis (i.e. observing a true difference between the groups' attentional functioning). However this also means that there is a 30% chance of failing to observe a difference between the groups statistically when a true difference does exist. This must be borne in mind when considering the reported results. If the sample sizes were larger, there would be a greater likelihood of appropriately observing a statistical difference between the groups.

**Clinical implications.**

A number of positive implications for the use of the TEA in clinical practise are raised by the present study. Firstly, the data in this study provides additional data on the TEA and it was found to be sensitive to attentional functioning with head injured individuals and chronic pain patients. Secondly it was accepted by all participants in the study and did not appear to be threatening or anxiety provoking to perform. This is in contrast to some similar measures such as the PASAT and the Stroop which can prove quite
distressing for individuals who perform at a compromised level. Thirdly, as would be expected with any measure of attentional functioning, the TEA appeared to be sensitive to the effects of mood disturbance. Thus it will be advisable to follow good practice and take account of mood when using the TEA clinically.

In summary, the present study observed differences between the attentional functioning of the three groups under investigation. Use of the TEA made it possible to compare a range of attentional functioning whilst overcoming many of the difficulties in making comparisons between previous studies in the literature. Previous research findings were supported which suggested that severely closed head injured subjects demonstrate deficits in many areas of attentional functioning and particularly on tasks which have a speed component or are mediated by processes of higher attentional control. Chronic pain patients were found to differ from controls on sustained attentional skills, although were functioning at a comparable level on all other attentional areas assessed. Both of these profiles of attentional deficit have implications for the rehabilitative healthcare provision for these client groups, both in terms of the content of rehabilitation programmes and the manner in which the care is delivered. Given the essential role of attention and information processing on learning and memory it is important to take attentional functioning into account when planning rehabilitation services. Limitations and findings from the present study can be used to guide future research.
References.


