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Volume I

"Can an implicit traumatic response be observed on a modified Stroop paradigm in patients who have suffered a closed head injury following a road traffic accident with amnesia for the traumatic event?"

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Academic Section: Essays
Adult Mental Health Essay

"Compare and contrast cognitive behavioural and psychoanalytic concepts of depression in adults, and the evidence underlying each of these models."

Year 1

December 2000
Introduction

Depression or low mood is a concept that is familiar to most of us. However, a proportion of people go on to develop enduring low mood or clinical depression, whom this essay will be referring to. The essay will first describe what is meant by clinical depression. The cognitive behavioural and psychoanalytic approaches to depression will then be discussed. Due to the large subject area, particular aspects of these concepts will then be addressed, regarding the similarities and differences of these two approaches. The cognitive behavioural concept will cover the theory behind Beck’s cognitive therapy, and the psychoanalytic concept will include the early work of Freud, to the work of object relations theory (Bowlby), to focus predominantly on the object representation approach by Blatt. Finally, the empirical status of these two models will then be evaluated, referring mainly to the theoretical status, not the therapeutic evidence.

The Diagnostical and Statistical Manual of Mental Disorders – 4th Edition (DSM-IV, American Psychiatric Association, 1994) classifies a major depressive episode as five or more of the following symptoms being present in an individual for at least two weeks: -depressed mood; loss of interest in activities; significant weight change; sleep disturbance; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness or excessive guilt; diminished ability to think or concentrate; and recurrent thoughts of death, recurrent suicidal ideation with or without a plan. Depressed mood or loss of interest must be one symptom.

Lifetime risk for major depression is almost double for females (20%) compared to males (12%) and 5% of the population are affected at any one time (Sturt, Kamakura, & Der, 1984: cited in Williams, 1997). A quarter of people are depressed for less than a month, but about 22% of cases will remain depressed two years later (Keller, Klerman, Lavori, Coryell, & Endicott, 1984: cited in Williams, 1997). Depression also has strong links with suicide (Beck, Hollon, Young, Bedrosian, & Bundenz, 1985: cited in Williams, 1997). Given that a major government target is to reduce levels of suicide (The Psychologist, November 1999), understanding and treating the condition in the current health service is vital.

Cognitive behavioural concepts

The cognitive behavioural approach developed primarily from Ellis’ Rational Emotive Therapy and Beck’s cognitive therapy (Rachman, 1997). I have chosen to focus on Beck’s approach, which was primarily developed as a model for understanding and treating depression. It is the standard cognitive behavioural approach used by most clinical psychologists and it is claimed to have widespread clinical acceptance (Hollon, DeRubeis, &
Evans, 1996). Therefore when the cognitive behavioural concept is mentioned, this will refer
to Beck’s cognitive therapy, unless otherwise stated.

Beck proposes that a person’s negative thinking or “negative cognitive triad” maintains
depression, where a depressed individual has a negative view of themselves, the world and
their future (Beck, 1991). Thoughts relevant to this triad appear suddenly and almost
spontaneously. With the less severely depressed patients, these thoughts appear to be on the
edge of consciousness. In more depressed patients they are more conscious and repetitive
(Beck, 1991), for example thinking “I cannot cope”. These thoughts often seem quite
plausible and are often accepted as true. Negative thoughts lead to a further depressed mood
and to confirmation of the thoughts (Fennell 1989). These thoughts interact with the variety
of symptoms mentioned by DSM-IV.

Beck’s model proposes that Negative Automatic Thoughts (NATs) are based on assumptions
or beliefs formed from experience, possibly childhood. A person is said to form assumptions
or schemata about themselves and the world, which help to organise their perception and
determine and evaluate behaviour (Beck 1967, 1976: cited in Fennell, 1989). In depression,
dysfunctional assumptions are formed from negative experience, which can be “extreme” and
“resistant to change” (Fennell, 1989). An example would be someone who believes “I am
useless.” These assumptions can lie dormant, until critical incidents, such as rejection activate
them and subsequent NATs.

Schemata influence and are influenced by a variety of biases in thinking (Beck, 1991). These
include selective abstraction (drawing a conclusion from one of many sources of information);
overgeneralisation (drawing a negative global conclusion from a single event); and
magnification and minimisation (exaggerating negative events and playing down positive
ones) (Davison & Neale, 1998). Beck proposed that a negative cognitive shift results in
depression, where positive information is filtered out and negative information referring to the
self is readily accepted (Beck, 1991).

The empirical emphasis from behavioural concepts has been incorporated and has led to an
importance of conducting outcome research (Rachman, 1997). This is through setting
homework in between therapy sessions, aiming to produce positive cognitive shift through
disconfirmation of beliefs.
Psychoanalytic concepts

Psychoanalytic theories of depression centre on ambivalence around aggression; loss; and self-esteem (Bateman & Holmes, 1995). Freud (1917) saw loss as central to depression. He compared depression (melancholia) to mourning and argued that melancholia was mourning pathologised. Depression is also a reaction to the loss of a loved object, a person or otherwise. Smith (1999) describes the hatred as unconsciously turned inwards. The individual unconsciously identifies themself with the lost object and attacks themself with the hatred for the loved object that has left them or let them down. Current loss in the person’s life activates experiences of earlier loss that may be real or symbolic (Freud, 1917).

Bowlby’s work on attachment theory has been valuable to understanding the influence of early experience on present interpersonal relationships in depression. Bowlby (1969: cited in Klerman, Weissman, Roundsville, & Chevron, 1984) proposed that humans have an innate survival instinct to form attachments. Attachments provide protection and nurturance. When bonds are formed or disturbed, intense emotions are evoked, such as hate or love. People are vulnerable to impaired interpersonal relationships if attachment does not develop early and vulnerable to depression when attachment bonds are disturbed.

These psychoanalytic themes have an important influence in the ideas advocated by Blatt (1974). It is this psychoanalytic approach to depression that I have chosen to focus on. Blatt (1974) maintains that with depressed patients there is an inability to retain a feeling of contact with the object when it is no longer present, “object representation”. He suggests two types of depression, anaclitic and introjective, with different impairments in object representation. In anaclitic depression, themes of dependency and helplessness are evident (Blatt, Quinlan, & Chevron, 1990). There is a fear of losing the object and the gratification it can provide. Object representations revolve around direct, physical, need-gratifying contact with the object. This is differentiated from introjective depression, where there is concern not for the loss of the object, but loss of the object’s approval, love and acceptance (Blatt, 1974). Perfectionistic tendencies are utilised to win approval by achieving excessive standards (Blatt & Maroudas, 1992). They are intensely self-critical and feel guilty when they fail. In line with Bowlby’s work, parental failure to provide dependable nurturance, care and support and excessive use of control, criticism and disapproval are linked with depression (Blatt, 1995).

Interpersonal relationships are seen as crucial in the psychoanalytic approach. The interaction of the individual’s past and present relationships maintains the depression.
Similarities and differences between the concepts

Cognitive behavioural and psychoanalytic concepts of depression have many similarities, which is hardly surprising, considering Beck's training in psychoanalysis. At a general level, both consider cycles maintaining depression. In the cognitive behavioural model, it is negative thinking, whereas in psychoanalytic models it is the cycle of relationships.

Both concepts include experience as an important influence on the present situation. In psychoanalytic concepts, the external world becomes internalised, such as past relationships with parental figures (Blatt et al., 1990). Experience of loss of a loved object can affect present relationships through unconscious mechanisms. Feelings of hatred directed towards the self are projected outwards to other people, who then introject or take in this hatred and pass feelings of hatred and aggression back towards the individual (countertransference) (Bateman & Holmes, 1995), continuing the cycle of maladaptive relationships. In the cognitive behavioural concept, experience is seen as important in the formation of beliefs or assumptions used to make sense of the world (Beck, 1991). This easily compares to the psychoanalytic concept. Cognitively, the individual is just trying to make sense of the early relationships. Loss of a parental figure or a loss of affection from a parent could be interpreted as that person not loving them, that it is their fault that their parents left them or don't love them. This could then give rise to the dysfunctional belief, "I am useless". Safran (1990) argues "interpersonal schemas" of dysfunctional assumptions of low self-worth and attributing personal blame for negative events may have arisen from inconsistent maladaptive experiences with early attachment figures. This is similar to the working models of attachment (Bowlby: 1973, cited in Collins, 1996). Safran (1990) considers the "interpersonal schema" as selecting information from interactions with attachment figures to predict and increase the likelihood of securing relatedness with those figures.

The difference arises with the importance placed on early experience, in relation to the necessary intervention point. In the cognitive behavioural concept, the present situation needs to change. Present negative thinking maintains depression (Beck, 1991). Patients are aided to identify NATs and to challenge them with a personal rational response. In psychoanalytic concepts, therapist insight for the patient into how past interpersonal relationships may be influencing present ones, including the therapeutic relationship, is used.

Linked with this is the level of accessibility to those processes underlying depression. In psychoanalytic concepts, feelings of hatred towards the lost loved object are repressed into unconsciousness. The client is unable to access these feelings. Through analysis the
unconscious themes emerge. In the cognitive behavioural concept, schemas are on the border of consciousness and are accessible to clients through therapist guidance (Beck, 1991). Beck (1976; cited in D. A. Clark & Steer, 1996) acknowledges that not all cognitive processes are conscious and vary in levels of accessibility. Altogether, distinctions between cognitive behavioural and psychoanalytic concepts of conscious accessibility are rather unclear.

A biological explanation of the level of consciousness has been proposed, suggesting that both concepts represent different pathways in the brain to the amygdala. The amygdala is increasingly accepted as being involved in emotional processing (LeDoux, 1995). Fonagy (Fonagy and Wolpert, 1999) suggests that the unconscious psychoanalytic concept could represent processing from the thalamus to the amygdala and the cognitive behavioural concept processing from the cortex to the amygdala.

There also appear to be clear similarities where personality vulnerability factors are concerned. Psychoanalytic theorists have found it useful to divide depressed individuals into two interpersonal constructs. Blatt (1998) describes individuals who are highly dependent on other people, requiring security (anaclitic depressives) and those who require a high level of autonomy and have high levels of self-criticism (introjective depressives). Beck (1996) has also made this differentiation between sociotropic and autonomy dimensions of personality. Those people high on either dimension when encountering a relevant stressor will be prone towards depression. A patient high in sociotropy is excessively dependent on others, so when rejection by another individual is experienced or perceived, depression is likely to follow. For the autonomous patient, when autonomy is jeopardised through failure and perceived lack of self-worth, depression is likely. According to Blatt and Maroudas (1992), the difference in views is that Beck considers a person to be vulnerable to both personality stressors, whereas Blatt suggests one vulnerable type or the other.

The cognitive behavioural approach could be considered to differ, by predominantly focusing on the depressed individual and largely ignoring the environment. There are no suggestions of the unconscious influences of projection or transference from psychoanalytic concepts. Beck (1991) addresses criticisms like this (e.g. Coyne and Gotlib, 1983), by suggesting that interpersonal difficulties in depression may be linked to the possible irrational and biased interpretations people make around the depressed individual. For example, the wife of a depressed husband who is seeking reassurance for his wife's love for him could interpret his dependent behaviour as wanting to control her. The wife may then become more distant, which the husband interprets as his wife not caring about him.
Empirical support for cognitive behavioural and psychoanalytic models

There has been widespread therapeutic evidence for the efficacy of cognitive behavioural approaches in treating depression (Dobson, 1989: cited in Beck, 1991). However, the “efficacy of any treatment can only be regarded as consistent with, not confirmatory of, its theory,” (Altshuler, 1984). Indeed Bandura (1978: cited in Altshuler 1984) suggests that the efficacy “may have more to do with the positive gratification and support provided, than with the modifications of cognitions and schemata posited by the theory.” Despite therapeutic evidence, it seems important to consider the empirical support for aspects of the cognitive behavioural model. On the other hand the psychoanalytical approach has been criticised for its inability to be scientifically testable. Wolpert (Fonagy and Wolpert, 1999) explains that, “the ideas are so vague and all-inclusive that it is not possible to test them and thus show whether they are right or wrong.” To what extent is there evidence in support of the cognitive behavioural approach and is there any evidence to support the psychoanalytic concepts? Moreover, what are the distinctions and parallels between the evidence for both models?

Comparisons

Research from both theoretical sides has one major common supporting theme, loss in depression. In the cognitive behavioural model evidence comes from the content-specificity hypothesis. Psychoanalytic models look more at early experience to see whether there were experiences of loss in depressed individuals, together with current ones.

The content-specificity hypothesis suggests that the pattern of thinking is specific to certain psychological disorders (Beck, 1991). Thoughts in depression are related to loss, defeat and deprivation, whereas in anxiety they are linked to danger and threat (Beck, 1991). Ingram (1990: cited in D. A. Clark & Steer, 1996) suggests that if the negative cognitive content in depression is similar in anxiety disorders, then it would be dubious to focus therapy on the cognitive aspects of depression, rather than on other non-cognitive factors. Beck, Brown, Steer, Eidelson and Riskind (1987) found support for the content-specificity hypothesis using the Cognition Checklist (CCL). Depression patients scored higher on the depressed (loss-defeat) subscales than anxiety patients, who conversely scored higher on the anxious (danger) subscales.

Loss also appears to have common empirical support in the relation of suicide to depression. In cognitive behavioural models, depressed individuals have a loss of hope (hopelessness) about the future (Dohr, Rush, and Bernstein, 1989), associated with high levels of suicide (Beck, Kovacs and Weissman, 1975: cited in Beck, 1991). Beck, Brown, Berschwick,
Stewart and Steer (1990: cited in Beck, 1993) found that in a study of out-patients using their Hopelessness Scale, those with the higher scores were eleven times more likely to commit suicide than low scorers.

As far as psychoanalytic models are concerned, empirical support for actual loss comes from Brown and Harris (1978). In a study of depressed women, 35% had lost their mothers before their eleventh birthdays, compared with 13% of controls. Oatley (1988: cited in Coyne and Whiffen, 1995) found that 90% of severe events in the lives of people with depression involved loss.

Kaslow, Reviere, Chance, Rogers, Hatcher, Wasserman, Smith, Jessee, James, and Selig (1998) found that depressed individuals who attempted suicide were more likely to report loss in childhood together with recent loss in adulthood than non-attempters. However, research suggests that it is not the death of the parent itself that leads to vulnerability to depression, but the quality of parenting in general, preceding or succeeding the loss (Klerman, Weissman, Roundsville, and Chevron, 1984).

Recently, both models have been looking at the role of personality factors as a vulnerability to depression. Beck (1983: cited in Beck, 1991) considers the influence of sociotropy (need for intimacy, dependence and nurturance) and autonomy (need for independence, goal achievement), whereas Blatt and Maroudas (1992) consider anaclitic depressives and introjective depressives. Recent research has produced mixed results. Segal, Shaw, Vella, and Katz (1992) in a longitudinal study looking at predictors of relapse found significant congruency between depressives who were self-critical and achievement-related adversity and some congruency between dependent depressed people who experienced interpersonal adversity. However, the interaction of achievement-related adversity and self-criticism only accounted for 10% of the variance (Coyne & Whiffen, 1995).

**Contrasts**

The cognitive behavioural model has largely concentrated on providing evidence to support the proposed negative cognitive shift, which suggests the negative cognitive triad about: the self; the world; and the future. Eaves (1982: cited in Beck, 1991) found that 97% of depressives were correctly separated from control subjects on the Automatic Thoughts questionnaire (Hollon & Kendall, 1980) and no control subjects were wrongly identified as depressed. Hollon, Kendall and Lumry (1986: cited in Haaga et al., 1991) found that negative thinking was found across a range of depression, including unipolar, bipolar, reactive and
Depressed individuals also appear to have more negativistic, self-critical thoughts than non-depressed controls (Blatt, Quinlan, & Chevron, 1990); have enhanced recall for depressed-content adjectives (Derry & Kuiper, 1981) and report lower levels of self-esteem (Lewinsohn et al., 1981). The negative view of themselves is also greater than recovered depressives (Bradley & Matthews, 1988) and even themselves when no longer depressed (Myers, Lynch, & Bakal, 1989). From a treatment perspective, Teasdale and Fennell (1982: cited in Beck, 1991) found that active negative thought reduction led to decreased negative affect in depressed patients. The evidence for negative thinking about the world appears to be far less extensive, with the only study cited in Haaga et al. (1991) suggesting that depressed individuals score higher on the world subscale of the Cognitive Style Test (CST: Blackburn, Jones & Lewin, 1986). However, further studies have suggested that not all types of depression will have the negative cognitive triad (Engel & DeRubeis 1993: cited in D. A. Clark & Steer, 1996; Abramson, Metalsky & Alloy, 1989).

There is also a substantial amount of evidence to support the cognitive biases or distortions, which Beck (1991) differentiates into three categories: perception, recall and interpretation. As far as perception is concerned, depressed individuals have been shown to have lower thresholds for briefly exposed negative information. Gilson (1983: cited in Beck, 1991), found that in a test of binocular rivalry, where scenes are presented separately to each eye, depressed individuals were more likely to perceive negative scenes than controls. Support even comes from non-psychological studies. Blackburn, Roxborough, Muir, Glabus and Blackwood (1990) found that depressed individuals were more efficient at processing negative verbal stimuli compared to controls. Bradley and Matthews (1988) showed that depressed subjects had a biased recall of negative adjectives.

While there appears to be significant amounts of support for the cognitive model, there is also doubt. Beck (1993) suggests that the key test of the cognitive model is in its predictive validity. Beck (1967: cited in Segal et al., 1996) emphasises vulnerability factors in depression to be constant, enduring differences in basic assumptions and attitudes. However, there seems to be a lack of empirical support for these dysfunctional beliefs as vulnerability factors (Miranda, Persons, & Byers, 1990). Particularly concerning, is the research suggesting that not all depressed people display negative thinking (Abramson et al., 1989) and that those who went on to develop depression were no more likely to display negative thinking style than those who did not (Lewinsohn et al., 1981). Furthermore, depressed people in remission could not be differentiated from control subjects on the basis of dysfunctional beliefs (Hollon...
et al., 1986: cited in Haaga et al., 1991) and that as individuals recover from depression, so their dysfunctional attitudes abate (Silverman, Silverman, & Eardley, 1984).

However, recent research has provided a possible explanation for these contradictory findings. The mood activation hypothesis supports the view that dysfunctional attitudes are a vulnerability factor for depression, however their accessibility depends on mood state and are therefore only evident in depressed mood (Miranda et al., 1990). They demonstrated that previously depressed individuals showed elevated levels of dysfunctional attitudes in an induced depressed mood, however controls did not, even though they were in a negative mood state. This would seem to fit with previous suggestions by Beck (1976: cited in D. A. Clark & Steer, 1996) that although they are stable structures, their level of accessibility varies. Previous work on diurnal accessibility, for example D. M. Clark and Teasdale (1982) demonstrated that depressed individuals recalled more negative autobiographical memories at times of the day when they were more depressed.

The mood activation hypothesis (Miranda & Persons, 1988) has important implications for relapse in depression. Not only does it suggest that just low mood may activate the dysfunctional attitudes and commence a downward spiral of ruminative thinking, but that patients with recurrent episodes of depression may be very sensitive to any mood changes. Minor changes may activate these assumptions which are very close to threshold, due to repeated activation. Once activated, depression related processing incorporates other processes, such as decreased behavioural output (Segal et al., 1996). Teasdale (1993: cited in Teasdale, Lloyd, & Hutton, 1998) suggests a more general level of schema representation: the Interactive Cognitive Subsystems framework. In a depressed mood, different representations become more tightly bound together, such as self-worth and the approval of others or success on personal tasks. Teasdale et al., (1998) found that depressed patients gave positive stronger associations with worth and success or approval than controls. Mindfulness Based Cognitive Therapy based on this updated theory already has positive outcome studies (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000). The idea is to disengage oneself from resulting negative thoughts and prevent the downward spiral of negative thinking, rather than changing thought content, as in cognitive behavioural approaches. It has been shown to be most successful for people with three or more episodes of depression, which is extremely important if one episode is seen to sensitise subsequent episodes (Post, 1992).

Psychoanalytic concepts have focused primarily on interpersonal relationships in depression, in particular early relationships being re-inacted unconsciously in the present. This is
considered as a result of internalising the hatred towards the presumed lost object and projecting these feelings to surrounding people. Several studies have shown that depressed adults are more likely to have childhood experiences of family discord, parental neglect, rejection and abuse (e.g. Orvaschel, Weissman, & Kidd, 1980: cited in Klerman et al., 1984). Also, recent evidence demonstrates the impact of transference. Andersen, Glassman, Chen, and Cole (1995) found that when participants encountered four fictional people, one of who resembled a significant other, then information they learnt about those people was confused with information they filled in from their representation of the significant other. They suggest that significant other representations are easily accessible, as they are “rich, intricate, personally important, and affectively laden.”

In present adult relationships, enduring depression may evoke friction, frustration and withdrawal, rather than empathy and support (Klerman et al., 1984). Powers and Zuroff (1988) investigating self-criticism in depression, have suggested evidence for the maintenance of depression in terms of interpersonal behaviour. They found that people interacting with self-critical participants rated them as poorly maladjusted individuals, despite giving them overt reassurance during interactions. Their subtle disparaging responses may provide the depressed individual with mixed messages, weakening the individual’s sense of worth and lead to further self-criticism in the attempt for reassurance. Stack and Coyne (1983: cited in Powers & Zuroff, 1988) suggest that intense self-criticism together with other symptoms of depression can lead to overt rejection and avoidance. The overt self-criticism is suggested to have developed from interactions with parents who were excessively, neglectful, controlling, critical and abusive (Blatt, 1995). Berlin (1985: cited in Blatt, 1995) found that a group of excessively self-critical women linked their self-criticism to their perfectionistic standards developed from their perfectionistic parents. Blatt (1979: cited in Blatt, 1995) reported that self-criticism was correlated with recalling parents as less nurturing and affectionate; and more controlling, inconsistently showing their love and setting excessive standards to achieve (McCranie & Bass, 1984: cited in Blatt, 1995). Nevertheless, Burchill and Styles (1988: cited in Vetesse & Mongrain, 2000) failed to find affective negativity in depressed peoples’ relationships. Vetesse and Mongrain (2000) differentiated dependency and self-criticism. Immature dependency (neediness) was associated with higher levels of depression and criticism from others than mature dependency (connectedness). However, overall, self-critical patients expressed more self-denigration and received more negative feedback.

The evidence so far cited is reliant on cross-sectional self-reports from depressed individuals. It is hard to exclude personal bias affecting the information about parents, especially with the
recall bias for negative information in the cognitive behavioural research (e.g. Derry & Kuiper, 1981). Frost, Lahart, and Rosenblate (1991), suggest that it is unclear whether parents set excessive standards or whether children perceive their parents as setting excessively high standards. For this reason, Block and Gjerde (in press: cited in Koestner et al., 1991) question the findings of McCranie and Bass, (1984) suggesting a correlation between self-criticism and more controlling, inconsistent parents.

However, longitudinal research supports associations between parental rejection and excessive authoritarian control before the age of 8 and depression as a young adult aged 18 (Gjerde, Block, & Block, 1991: cited in Blatt, 1995). Zuroff, Koestner, and Powers (1994) found associations between self-criticism as an adolescent and a higher level of maladjustment, depression and lack of satisfaction with work and family relationships, at age 31. Moreover, Koestner, Zuroff, and Powers (1991) found interesting gender differences. Female levels of self-criticism during childhood were stable through to young adulthood, whereas for males there was a strong relation for self-criticism at a young age and inhibited aggressive impulses in adulthood. They suggest this may be due to social learning, where it is acceptable for females to express inadequacy through depressed feelings, but more acceptable for males to express it through anger. Also, development of self-criticism reflected parental behaviour that was restrictive and rejecting, but only from the same sex parent. This could be seen to result in the internalisation of the same sex-parent as a harsh superego, setting unobtainably high standards and inflicting guilt for not reaching those standards (Koestner et al., 1991). However, Koestner et al. (1991) note limitations, such as the reporting of both maternal and paternal parenting styles by the mother. Furthermore, Brewin, Andrews, and Furnham, (1996: cited in Kuyken & Brewin, 1999) found contradictory evidence that parental approval was a predictor of positive self-esteem among young adults, but not disapproval.

Longitudinal research for cognitive behavioural models of depression has focused primarily in the present day, but appears relatively sparse, perhaps due to the mood activation requirement for accessing dysfunctional attitudes (Miranda & Persons, 1988) and the unclear results from the personality-stressor research (Coyne & Whiffen, 1995).

With the research on the mood-activating hypothesis, the question is what is it that activates the mildly depressed mood. Is it the interpersonal consequences of the depressed person’s behaviour, which may be unconsciously motivated, such as dependency? Or is it the interpretation of a particular event based on the person’s specific vulnerability. Is it actual
adversity, or is it perceived adversity as a result of unrealistic standards established by the individual, as a result of beliefs or the internalised harsh parent?

**Conclusion**

I have attempted to explain the similarities and differences between cognitive behavioural and psychoanalytic concepts of depression. Cognitive behavioural concepts have focused on the work by Beck, with more recent explanation by the mood-activation hypothesis (Miranda & Persons, 1988) and Mindfulness Based Cognitive Therapy (Teasdale et al., 2000). Psychoanalytic concepts have been harder to characterise as they have a longer history of development. Therefore, I have taken the early work of Freud, work on attachment theory by Bowlby, with the recent ideas expressed by Blatt on two dimensions of depression (anaclitic and introjective). Differences exist between: - conceptual focus, past experience for psychoanalytic concepts and present functioning for cognitive behavioural concepts; suggested levels of conscious accessibility; and problematic interpersonal relationships versus problematic information processing. However, in my opinion there are clear similarities, such as the concept of loss; the importance placed on pathological cycles maintaining depression, whether interpersonal or thinking; the inclusion of early experience; and the role of personality variables.

Empirically, there appears to be more support for the psychoanalytic model than has been suggested (e.g. Wolpert, in Fonagy & Wolpert, 1999), especially as far as longitudinal research is concerned, which appears lacking for the cognitive behavioural model. It appears to me though, that the evidence for the two models is almost complementary. The only difference is the focus, whether it is loss, early experience or personality factors. For example, the psychoanalytic contribution of the impact of early experience would add support to the development of dysfunctional beliefs. Evidence for the activation of dysfunctional assumptions in the cognitive behavioural model would add support to psychoanalytic model, if you consider them as assumptions that were formed during personal distress, whether abandonment or inability to achieve affection from critical parents. It would make sense that these assumptions would be more accessible with accompanying low mood, which may parallel the mood associated with encoding. From Teasdale’s cognitive perspective (1997), these implicational meanings are inextricably linked to emotion, from experience associated with humiliation or rejection. From a psychoanalytic perspective, present relationships could be considered to reach the chronically accessible significant other representations from past relationships, which are also suggested to be affectively laden (Andersen et al., 1995).
With regard to therapy, Teasdale (1997) has suggested that it is not sufficient to weigh up evidence of previously interpreted negative experience to prevent depressives from relapsing. What is required is the changing of schematic self-models. This he suggests can only be achieved through changing the way the person is and the experiences they encounter. Whether this is achieved through breaking the cycle of repeated interpersonal relationships or the cycle of depressive thinking, would be difficult to untangle. They seem mutually compatible mechanisms to me, one influencing the other in a dynamic manner, perhaps along the lines of the biological model, where conscious and unconscious processing merely involve separate pathways in the brain (Fonagy & Wolpert, 1999; Goodale & Milner, 1996).
References


People with Learning Disabilities Essay

"Sexually abused and/or sexually abusing: what is the role of the clinical psychologist in working with people with learning disabilities who have been abused or abuse others?"

Year 1

July 2001
Introduction

Attitudes towards people with learning disabilities have tended to be largely contradictory. They have been regarded both as devoid of sexuality, yet sexually promiscuous and a threat to society (Moss, 1998). The later beliefs even led to enforced sterilisation for people with learning disabilities, which continued in some states in the USA until the 1970s (Hergenhahn, 1997: cited in Lumley & Scotti, 2001). Being devalued both as a sexual being and a member of society could be considered as creating opportunities for abuse (McCarthy, 1993; Sobsey, 1994a).

The essay will first discuss what sexual abuse is and how it is related to people with learning disabilities. Then it is necessary to highlight who the sexual abusers and the sexually abused are. Both individuals who have been sexually abused and / or sexually abuse others will be covered. After all, there may be a cycle of abuse, where many who sexually abuse may have been sexually abused themselves (Clare, 1993). The focus will largely be on adults, although there is an understanding that abuse does occur during the childhood of people with learning disabilities (Westcott, 1993: cited in Sobsey, 1994b). Then the role of the clinical psychologist in working in the area of sexual abuse with people with learning disabilities will be discussed. The author has chosen to use an “ecological model” of sexual abuse proposed by Sobsey (1994a) to provide the structure for this essay. The author believes that this model clarifies the need to consider sexual abuse work at various levels as a clinical psychologist working in the area of learning disabilities. Sobsey (1994a) suggests working at the levels of culture, the living environment and the level of the individual sexual abusers and the sexually abused.

What is sexual abuse?

Various definitions can be encountered in the literature. For example Sgroi (1989: cited in Thompson & Brown, 1997) suggests that sexual abuse is, “any sexual act (not necessarily involving contact) with another party who did not or cannot consent to the act, or for whom there exists a barrier to consent.” Barriers to consent include any power imbalance in the relationship that would counteract consent, for example threats or coercion (Thompson & Brown, 1997). Power imbalance would also seem to include McCarthy’s (1993) definition of sexual abuse as, “any sexual contact which is unwanted or and / or unenjoyed by one partner and is for the sexual gratification of the other.” This later definition would include sexual acts that appear to be consensual, but usually cause great discomfort to the person on the receiving end (McCarthy, 1993). These definitions will be used as the focus of sexual abuse in this essay. Thompson (1997) found that in his study, the most common forms of sexual abuse
were indecent exposure, touching private parts of the body through clothing, verbal sexual harassment, and actual / attempted penetration of the vagina or anus.

**Prevalence and incidence of sexual abuse**

Prevalence studies suggest that there have been very high levels of people with learning disabilities who have experienced sexual abuse. For example, Sobsey and Doe (1991: cited in Sobsey, 1994a) found that 76.9% (out of 107 sexual acts) of people with learning disabilities in their Canadian study had been abused more than once and 49.6% greater than 10 times. Incidence studies, such as Brown and Turk (1994), estimated that 60 new cases of sexual abuse might be reported each year in the UK. However, they admit that this may be an underestimate due to a lack of disclosure; difficulties in defining abuse and initiating proceedings.

**Who are the victims / abusers?**

Most studies have reported that it is women with learning disabilities in particular who are the victims. Brown and Turk (1994) found that 73% (61/84 cases) were women. Sobsey (1994a) found that 83% of 107 sexual offences against people with learning disabilities were against women. However, Beail and Warden (1998) found that 86% of victims of sexual abuse referred to their service were men with learning disabilities. They suggest that women may be overlooked, due to differences in subsequent behaviour. Men may be more likely to be referred to psychology departments for challenging behaviour, such as sexualised behaviour, whereas women may become depressed and less challenging for services.

The sexual abusers are commonly identified as men 97% (Brown & Turk, 1994) and 88.7% (Sobsey, 1994a). In particular, men with learning disabilities have been identified as the main perpetrators of abuse with people with learning disabilities (Thompson & Brown, 1997; McCarthy, 1993). Brown and Turk (1994) found that out of 84 cases which had sufficient evidence of abuse, 35 cases were committed by other service users, 15 by family members and 12 by staff / volunteers. In contrast, Sobsey (1994a) reported that people with learning disabilities committed only 6.7% of 107 acts of sexual abuse and that 25.2% were committed by disability staff, followed by family members (19.6%).

However, the detection of sexual abuse is a difficult area. Sexual abuse by service users may be easier to detect, due to it being more overt, with less available privacy (Thompson & Brown, 1997). Sexual abuse by staff may be less obvious, reflecting differences in the studies (Brown & Turk, 1994; Sobsey, 1994a). Brown and Turk (1994) also found that half the
allegations of sexual abuse which did not have substantial evidence (25 cases), involved suspicions of family members.

Presentation of symptoms of sexual abuse may also differ from the general population and therefore affect awareness. Beail and Warden (1998) found that most clients were referred for behavioural problems. It was only in therapy that sexual abuse was uncovered. This is one area where clinical psychologists have had a major impact on the area of learning disabilities already, in attempting to understand the function and meaning of challenging behaviour (e.g. Emerson, 1998).

The role of clinical psychology
Clinical psychologists are involved at many levels of the lives of people with learning disabilities. They are involved in researching and changing attitudes towards people with learning disabilities; working to create better lives for people with learning disabilities in the community rather than in institutions; supporting carers of people with learning disabilities; as well as providing the more recent access to individual therapy. Therefore, it seems that when working with people with learning disabilities who have been abused and / or abuse others, the clinical psychologist’s role would need to cover all these different levels of working.

Sobsey (1994a) reports that 30.5% of cases of sexual abuse took place in environments resulting from the learning disability. It is important to consider what contributes to sexual abuse in order to decide appropriate interventions. An “ecological model” of sexual abuse (Sobsey, 1994a) appears to be a useful way to formulate sexual abuse amongst people with learning disabilities and illustrate where clinical psychologists should and have been contributing (Moss, 1998).

Sobsey (1994a) describes three levels to the model: 1) macrosystems (cultural factors); 2) exosystems (living environment); 3) microsystems (families, abuser-victim relationship).

Macrosystems (cultural factors)
Sobsey (1994a) describes attitudes as being very important. People tend to equate quality of life with intelligence. If someone’s life is already worthless, then it cannot be harmed by abuse. Brown (1991: cited in McCarthy, 1993) writes, “one cannot be sexually devalued if one has no value as a sexual being to begin with.” Using this context, Moss (1998) describes that clinical psychologists can tackle beliefs about the behaviour of people with learning disabilities and publicise work.
As mentioned earlier, there is a belief that people with learning disabilities are asexual (Moss, 1998). In fact, it was not until recently, that people contemplated the idea of people with learning disabilities being sexually abused and people had to “think the unthinkable” (Brown & Craft, 1989). Work from the Sex Education Team (SET), for example McCarthy (1993) and Thompson (1994) have enlightened people about the sex lives of people with learning disabilities. McCarthy (1993) describes sex as predominantly for the gratification of the man. Where there are two men involved having sex, again the sex appears to be for the pleasure of just one of the individuals (Thompson, 1994). Penetration occurs with a dry vagina or anus, making it a painful experience for those on the receiving end (McCarthy, 1993; Thomson, 1994). There is also no private space for sexual activity, which results in it being rushed and no expectation of pleasure by the woman or man being penetrated. Sex purely for the gratification of one person would also count as sexual abuse (McCarthy, 1993).

Clinical psychologists contribute to the understanding that overt sexual behaviour or other challenging behaviour of people with learning disabilities may be the result of sexual abuse. Sobsey (1994a) found that out of 107 acts of sexual abuse, 58% of people showed signs of emotional distress, 16.9% withdrawal, 16.9% aggression, non-compliance, inappropriate sexual behaviour, and other behavioural problems. In addition, behaviour may tend to vary with gender, with women more likely to withdraw, become depressed or self-injure, whereas males may “act out” behaviour and cause more problems for carers (Beail & Warden, 1998). In this respect, the effects of sexual abuse seem similar to the general population (Moss, 1998).

It is only in understanding that people with learning disabilities are sexual beings and are affected in similar ways by sexual abuse as the general population that abuse can be recognised; people can be protected and given access to support and therapeutic interventions. This is where the mini-culture of the living environment is an important area for clinical psychologists to contribute.

**Exosystem (living environment)**

Rindfleisch and Rabb (1984: cited in Sobsey, 1994a) reported people with learning disabilities to be twice as likely to be sexually abused in an institution as in the community. Although the vast majority of people have been resettled into the community now, this historical aspect cannot be ignored. People are often resettled with perpetrators of sexual abuse (Thompson, 1997) and may be largely reliant on care staff. Familial isolation and financial but not emotional attachment of staff have both been identified as possible risk factors for sexual
abuse (Sobsey, 1994a; Pillemer, 1985: cited in Sobsey, 1994a). Although there is less risk for
sexual abuse in smaller accommodation e.g. group homes compared to institutions (Sobsey,
1994a), there are several areas where clinical psychologists can have an impact. These are: 1) helping develop policies and procedures to protect against abuse; 2) guidance for staff about how to work with people with learning disabilities; 3) access to assertiveness and sexual rights education; 4) helping make services for survivors and perpetrators of sexual abuse accessible to people with learning disabilities (Moss, 1998).

Policies and procedures

Policies include vulnerable adult policies, where sexual abuse is suspected, leading to protection and investigation. This appears to be a very important area in the literature. Clinical psychologists have helped identify the need for guidance and training for staff in reporting suspicions of sexual abuse (McConkey & Ryan, 2001). McConkey and Ryan (2001) found that in their study of 150 care staff, more than 50% highlighted clear guidelines and more training as the two main ways of increasing their confidence in dealing with issues of sexual abuse. Only 11% of direct care staff had had any training on vulnerable adults. In addition, Brown and Thompson (1997) report that service responses to sexual abuse often fail because of inconsistent perception and assessment of risk by staff members.

Perception of risk has focused on increasing staff knowledge about sexual abuse and identifying staff attitudes towards sexuality and sexual abuse, which are seen as important in guiding their behaviour.

Staff training

Carer's attributions may influence whether they feel the desire to help someone with challenging behaviour. For example, if carers perceive that a person’s challenging behaviour is within their control, then they may react angrily and negatively to this individual. If they perceive that this behaviour is out of the person’s control, then they may react with sympathy and understanding (Stanley & Standen, 2000). This is an important area for clinical psychology to contribute to, especially in light of the possible presentation of sexual abuse as challenging behaviour (e.g. Sobsey, 1994a; Beail & Warden, 1998). Hogg, Campbell, Cullen, and Hudson (2001) ran an open learning course for a range of staff working with people with learning disabilities. The aim was to focus on increasing staff knowledge about sexual abuse amongst people with learning disabilities. This involved agreed definitions of sexual abuse; educating about antecedents and consequences of sexual abuse; what procedures to follow once sexual abuse is suspected; consequences and effects of sexual abuse for staff, carers,
victims, perpetrators and the mini-culture of the environment they work in. The course also focused on how to reduce sexual abuse in practice. The effect of training on staff attitudes was also assessed.

Although staff attitudes were largely in agreement with the course teaching at the pre-test measure, they found that staff knowledge of sexual abuse was significantly increased, as well as the need to accept formal practices in dealing with abuse. There was also increased confidence in dealing with incidents and mindfulness of the vulnerability of people with learning disabilities to sexual abuse. Whilst there was an increase in the vast majority of areas of knowledge, there was no significant improvement in knowledge of why people with learning disabilities were more at risk of sexual abuse than in the general population, or knowing the ratio of men to women victims. Staff did improve significantly on knowing who are the main perpetrators of sexual abuse amongst people with learning disabilities according to the literature. However, there was a lack of agreement that “normal sex” for men and women with learning disabilities can be abusive, which the literature is attempting to make people aware of (e.g. McCarthy, 1993; Thompson, 1994). However, importantly following the training there was increased agreement to acknowledging that staff may sexually abuse people with learning disabilities and that junior staff may feel unable to report suspicions of sexual abuse by more senior members of staff (Hogg et al., 2001). Interestingly, there was also an increased agreement to a statement that staff may react negatively to any sexual expression by their clients. There has been some concern that training staff in identifying and preventing abuse may lead to an over-cautious approach where all sexuality is seen as risky (Craft, 1987: cited in McConkey & Ryan, 2001).

The staff in the study were selected by their trusts to take part in the course. Whether there were any biases, for example choosing those most likely to benefit, in terms of willingness to change views and wanting to learn is uncertain. As the sample may not have been randomly chosen, it makes it unclear whether the results are likely to generalise to other members of staff. Although knowledge was maintained over 6-month period the authors suggest that it would also have been useful to see whether the course had actually impacted on practice (Hogg et al., 2001), particularly whether training just some members of staff could effect the mini-culture and the other members of staff. It is also not clear whether it was highlighted that people with learning disabilities who abuse other people with learning disabilities may have been abused themselves (e.g. McCarthy, 1993).
Helping carers to understand the process of recovery of someone who has been sexually abused is also a possible valuable contribution from clinical psychologists (Moss, 1998). Understanding challenging behaviour exhibited by someone who has been sexually abused is important for carers to facilitate support and prevent any punitive strategies. Clinical psychologists can educate staff about the stages of recovery following sexual abuse and help with reacting to these behaviours. This may include numbness, disbelief, periods of distress, tearfulness, intense anger, rage, shouting, aggression and self-harm. However, once memories are remembered and processed, then the person is usually able to move on (Moss, 1998).

People with learning disabilities also need access to sex education, assertiveness training and sexual rights. There is often an acceptance of unwanted sexual contact by individuals (e.g. McCarthy, 1993). Without knowing what behaviour is acceptable, people with learning disabilities may not know what is sexually abusive behaviour. This is important, as a large part of disclosure of sexual abuse comes from people with learning disabilities (66% out of 84 cases and only 25% staff, Brown & Turk, 1994). Clinical psychologists are often responsible for running groups to inform people with learning disabilities about sex and their sexual rights.

Educating people with learning disabilities
As has been mentioned, there has been almost an acceptance amongst people with learning disabilities that sexual pleasure is one-sided (McCarthy, 1993; Thompson, 1994). It may be hard for women with learning disabilities to think of themselves in a positive sexual sense or to acquire protective skills with negative attitudes towards people with learning disabilities after years of abuse, exploitation and coercion (McCarthy, 1993). Men as victims should also not be forgotten (e.g. Thomson, 1994; Beail & Warden, 1998). Therefore, there is both a need to educate people about their bodies and their rights in sexual relationships (McCarthy, 1993).

Sexual abuse prevention programmes are an area where clinical psychologists can aid people with learning disabilities. Lumley, Miltenberger, Long, Rapp, & Roberts (1998) designed and evaluated a sexual abuse prevention program for six women with learning disabilities. Training focused on preventing abuse from caregivers. This incorporated teaching participants to respond appropriately to a sexual lure by 1) verbally refusing the request; 2) leaving the situation; 3) reporting the incident to a trusted adult e.g. staff member or care manager. Training initially took the form of sex education about body parts, sexual behaviour and appropriate and inappropriate sexual relationships (especially someone who has power over them e.g. staff). Then participants practised responding appropriately to different sexual
lures with feedback, until they were able to do so to criterion (responses 1 to 3). All participants learned the skills and reached criterion. However, when followed up using “naturalistic probes”, i.e. testing the participants unaware in their living environment, they failed to reach the criterion although they had passed a role-play situation at follow-up. Despite not fully generalising the skills, half of the participants did show some improvement from a pre-test “naturalistic probe”. For some, it may be that it is hard to overcome the years of coercion, which McCarthy (1993) refers to. However, a fellow client sexually assaulted one participant during the training. The participant did say “no” and unfortunately although not able to get out of the situation was able to report the incident to a member of staff as a result of the training (Lumley et al., 1998). Clinical psychologists can continue to further such programs and increase their efficacy.

Clinical psychologists are also contributing to sexual abuse prevention as part of general safety training, such as “Keeping Safe in the Community” groups (Long & Holmes, in press). After all, now more people with learning disabilities are living in local communities, they are open to possible abuse from members of the public as well as other service users, staff and family. This group format includes identifying people who it may not be safe to trust (e.g. strangers); that people should not be able to touch people’s bodies if they do not want them to or like it; and how to seek help if they are in an uncomfortable or dangerous situation. The group also includes practice at assertiveness in the form of role-playing how to deal with potentially dangerous situations, such as a stranger inviting the person back home or dealing with unwanted touching. These role-plays are videoed and then played back to the group, so that the performance can be judged and commented on by all participants. There was a significant improvement in knowledge of keeping safe following the group, which was maintained 4-6 months later (Long & Holmes, unpublished). Whether these skills can be generalised though to potential situations is unclear (e.g. Lumley et al., 1998).

The sexual abuser
As far as the abuser is concerned, there is also a possible role for clinical psychologists to be involved in co-ordinating or contributing to the care of people with learning disabilities. People may have been found guilty of sexual abuse or they may be suspected of sexual abuse, but there have been no criminal proceedings (Thompson, 1997). Work may involve multidisciplinary work with probation (Lindsay, Neilson, Morrison, & Smith, 1998) and care staff, as well as other professionals, such as speech and language therapists. Whether someone with learning disabilities involved is formally charged seems to depend on whom the offence has been committed against. Sexual abuse towards women in the general public and
children are more likely to reach court than sexual abuse of other people with learning disabilities or female members of staff (Thompson, 1997). This is an area to which clinical psychologists can contribute greatly, in terms of both increasing understanding of the sexually abusive behaviour of the individual and risk assessment. At present services may be ignoring even the most serious forms of assault by people with learning disabilities against other people with learning disabilities, but are compelled to act when the sexual abuse is directed at someone more able, such as a member of public (Thompson, 1997). Indeed vulnerable people, for example with communication difficulties or a lack of assertiveness may be living with or close to known abusers (McCarthy & Thompson, 1996: cited in Thompson, 1997).

Clinical psychologists can also contribute to understanding the response of staff teams to sexual offenders with learning disabilities. Clinical psychologists can help to reflect on the psychological transference encountered in caring for someone convicted or suspected of sexual offending, including denial, collusion and desires to punish the offenders, (Corbett, 1995) rather than act, understand and help. Clinical psychologists can facilitate understanding and empathic support for the sexual abuser at a time that may be confusing and distressing for the individual.

**Microsystem (victim and abuser level)**

Clinical psychologists can have different roles at the level of someone with a learning disability who has been sexually abused and / or sexual abusing. They may be involved in facilitating the disclosure process by an individual and or providing therapeutic involvement (Corbett, Cottis, & Morris, 1996). Clinical psychologists may also be involved in referring people to an external organisation (e.g. RESPOND). RESPOND provides an individual or group psychotherapeutic service for people with learning disabilities who have been sexually abused and / or sexually abusing. The author has chosen to focus on the therapeutic aspects when considering the sexually abused and / or sexually abusing individual, which usually consist of individual or group therapy.

**Individual work**

**Sexual abusers**

Techniques for the non-learning disabled population, usually use cognitive restructuring techniques, for example victim empathy to challenge the distorted cognitions that sexual offenders may have formed about their behaviour (Bremble & Rose, 1999). This work includes working with distorted cognitions concerning the victim, such as, “they enjoyed it,” or, “it won’t cause them any harm,” (Lindsay, Olley, Jack, Morrison, & Smith, 1998). Until
recently, the use of such therapeutic techniques seems to have been a rare occurrence for people with learning disabilities (Thompson & Brown, 1997). The use of cognitive-behaviour therapy (CBT) for people with learning disabilities is achieving increasing acceptance (Stenfert Kroese, Dagnan, & Loumidis, 1997). If the acceptance and contribution of CBT is anything like that in the non-learning disabled population, then clinical psychologists will have a large role to play. Bremble and Rose (1999) report using CBT for 5 out of 19 cases of sexual abusing. Whilst they report a certain amount of success for a range of interventions, they fail to report whether there were any differences in outcome according to the therapeutic input. However, Lindsay, et al., (1998b) advocate the use of group rather than individual therapy (see group work section), finding better success for group CBT versus individual CBT. They only base this on comparing the treatment of two individuals though. The man who received individual CBT reoffended after 9 months.

The application of psychodynamic theory is also an invaluable possible contribution from clinical psychologists. There is a need for recognising power dynamics, trauma, broken attachment, death and unresolved grief when working with sexual offenders (Corbett, 1995).

**Sexually abused individuals**

Providing psychotherapeutic input to people with learning disabilities has been slowly increasing, with clinical psychologists playing an important role (e.g. Beail, 1995). Much of the literature though discusses the process and not outcomes (Beail, 1995). However, Beail (1994: cited in Beail, 1995) reported a decrease of symptoms on a simplified version of the Symptom Checklist (SCL-90-R) for a man with a learning disability who had been ritually abused. The number of symptoms dropped from 70 (out of 90) to 32 following 40 sessions of psychodynamic psychotherapy. The possibility of therapeutic involvement with people with even severe or profound learning disabilities has been highlighted by the work of the psychotherapist Valerie Sinason (1989; 1992).

**Group work**

**Sexually abused individuals**

Again, clinical psychologists are involved in setting up and running groups for people with learning disabilities who have been sexually abused. Group work in the literature seems to have mainly focused on women with learning disabilities who have been sexually abused, although the need for input for men with learning disabilities is apparent (e.g. Beail & Warden, 1998).
Some groups have attempted to facilitate general improvement in terms of self-esteem, assertiveness and empowerment in women with learning disabilities who have been sexually abused (e.g. Barber, Jenkins, & Jones, 2000). After all, being passive and lacking assertiveness have been factors associated with risk for sexual abuse (Thompson, 1997). Where abuse has already taken place, then this appears to be an important area to cover. The group aimed to achieve this, by providing an environment for therapeutic change, where there is a feeling of trust and acceptance by all group members (Rogers, 1977: cited in Barber et al., 2000). Information was also provided about sexual knowledge and health; assertiveness and self-protection. Skills were again practised through role-plays. Throughout there was opportunity for discussion. However, although there was an increase in assertiveness and self-esteem, this was not maintained at a 3-month follow-up.

Other groups have started off as sex education groups, but have developed into a survivor’s group for sexual abuse, following disclosure of sexual abuse by members of the group (e.g. Millard, 1994). They report positive results. Group members fed back that the experience of talking about sexual abuse had been beneficial. Participants also felt more assertive and developed a greater amount of choice in their lives (Millard, 1994). The author also suggests that the experience of learning to value yourself as a person is an important outcome from the group and necessary for the healing process. Clinical psychologists can contribute towards this healing process, by enabling groups to explore emotions and beliefs not only about the sexual abuse, but what it means in general to be regarded as a person with a learning disability (Millard, 1994).

**Sexual abusers**
Clinical psychologists may also contribute to group work that educates people with learning disabilities who sexually abuse, such as sex education and / or therapeutic work. At present, there appears to be no evidence that well-trusted methods used with the forensic population are effective for people with intellectual disabilities (Clare & Murphy, 1998). More recent work (Murphy, 2001), aims to develop cognitive-behavioural group work for people with learning disabilities. The group work aims to cover sexual education, as well as assessing and challenging cognitive distortions and enhancing victim empathy. These have all been found to be successful with forensic populations (Murphy, 2001). The clinical psychologist can again adapt therapeutic styles to make them accessible to people with learning disabilities and individually tailored. This often includes pictorial presentation, to compensate for any difficulties in verbal communication (Stenfert Kroese et al., 1997). Sexual offenders with learning disabilities appear to benefit from adapted cognitive-behavioural therapy (Lindsay,
1999; Lindsay et al., 1998a; Lindsay et al., 1998b). Lindsay et al. (1998b) report that group work may be more beneficial than individual work. In a group format other members can be therapeutic, by being both empathic and also challenging to other participants. There are also valuable opportunities to develop social skills, as many sex offenders may be isolated individuals (Lindsay et al., 1998b). There also appears to be a more light-hearted feel to the group, allowing brief respite from the intensity of individual sessions as well. In terms of effectiveness, none of the six men reoffended in a 4-year period after treatment.

Conclusion
This essay has shown that the role of the clinical psychologist with people with learning disabilities who have been sexually abused and/or sexually abusing is varied and can involve many different roles. In line with the many different levels that clinical psychologists work at when working with people with learning disabilities, an approach to sexual abuse has been considered to take this into account. An “ecological model” of sexual abuse (Sobsey, 1994a), has been used to show the many areas where clinical psychologists do and can contribute. This has been at the level of culture (macrosystem) - promoting and publicising work and changing attitudes; the living environment (exosystem) - educating and supporting people with learning disabilities and staff teams; and at the level of the victim and the abuser (microsystem) - with individual and group therapeutic interventions.

Since people were forced to “think the unthinkable” (Brown & Craft, 1989), sexual abuse amongst people with learning disabilities has been a rapidly increasing research area. Clinical psychologists have had a large involvement in this growth. The challenge is to take this area forward by promoting awareness and understanding, and developing effective interventions to decrease the vulnerability of people with learning disabilities to sexual abuse. At the same time, it is also vital to provide input to those who sexually abuse others. Facilitating the sexual expression of people with learning disabilities will be another major factor. Perhaps, it is only when people with learning disabilities are regarded and treated as sexual beings that real progress will be made and their vulnerability to sexual abuse will be reduced.
References


Child and Family Essay

"Anxiety disorders in childhood are fundamentally different from anxiety disorders in adulthood. Discuss with reference to the theory and treatment of two anxiety disorders."

Year 2

December 2001
Introduction
Normal fear reactions are important for the survival of species. However, anxiety disorders are considered to be fear reactions that have become maladaptively responsive to other forms of perceived threat (Rosen & Schulkin, 1998), such as the negative evaluation by others (social phobia). Anxiety is considered to involve three main components: physiological (e.g. increased heart rate), behavioural (e.g. avoidance or freezing), and cognitive (e.g. hypervigilence and appraisal of danger) (Salkovskis, 1996). Research reports that some adults describe the onset of their anxiety disorder to be dated back to their childhood (Bourdon, Boyd, Rae, Burns, Thompson, & Locke, 1988: cited in Kashdan & Herbert, 2001). The course of childhood anxiety disorders can often be chronic as well (e.g. OCD, Clark, 2000). It therefore seems likely that anxiety disorders in adulthood are a reflection of those disorders in childhood. This is often assumed to be the case in the literature (e.g. social phobia, Kashdan & Herbert, 2001). Theory and treatment of childhood anxiety disorders has lagged behind research into anxiety disorders in adulthood (Shafran, 2001) and may partly explain the transference of existing adult knowledge about anxiety disorders into the child domain. Nevertheless, does the emerging child research suggest that similar theoretical constructs can explain the development of anxiety disorders in children and adults? Is similar treatment effective for both client groups? This essay will focus on two anxiety disorders, obsessive-compulsive disorder (OCD) and social phobia, as these are anxiety disorders that span different stages of childhood. Similarities and differences in the theory and treatment of these disorders will be discussed to see if anxiety disorders are fundamentally different in childhood and adulthood. The essay will concentrate on psychological theory and treatment, in particular cognitive and behavioural theories and treatment, as there is controlled data supporting the efficacy of these approaches (Labellarte, Ginsburg, Walkup, & Riddle, 1999).

Obsessive-compulsive disorder
Obsessive compulsive disorder is considered to consist of obsessions and compulsions. Obsessions are described as, “recurrent, unwanted intrusive thoughts, ideas, images, or impulses that the person experiences as ego-dystonic and intensely distressing (American Psychiatric Association, 1994). The person is horrified by these intrusions and tries to resist them (Shafran, 2001). Often the person engages in compulsions, “repetitive physical or mental acts that the person feels driven to performing in response to the obsession or according to certain rules (American Psychiatric Association, 1994).” Usually obsessions and compulsions occur together (Clark, 2000; Shafran, 2001). Obsessions can occur by themselves without obvious compulsions in adults (Foa & Kozak, 1995) and compulsions
may occur without obvious obsessions in children (Shafran, 2001). Prevalence rates are roughly similar with 1-4% of children having OCD (Shafran, 2001; Carr, 1999), compared to approximately 2-3% of adults (Clark, 2000). The male to female ratio is approximately 3:2 in children (Geller, Biederman, Jones, Park, Schwarz, Shapiro, & Coffey, 1998). The ratio is approximately equal in adults (Rasmussen & Eisen, 1992: cited in Shafran, 2001). The mean age of onset is 10 years in children and 21 years in adults (Geller et al., 1998). However, 30-80% of adults recall the onset of symptoms before age 18 (Rasmussen & Eisen, 1992: cited in Shafran, 2001). There is also co-morbidity with tic disorders, such as Gilles de la Tourette syndrome in children (Shafran, 2001). However, are there theoretical differences that take into account these differences in presentation in both client groups?

Differences in adult and child theories of OCD
The main distinction between the theories of OCD in children and adults is the aetiology of the disorder. The most dominant child theory takes a neurobehavioural approach, whereas the most dominant adult theory draws from cognitive and behavioural theory (Shafran, 2001). This is an unusual distinction, as treatment approaches with both children and adults are considered cognitive behavioural, as will be discussed later.

The theory of childhood OCD revolves mainly around possible dysfunction in the basal ganglia of the brain, an area that is involved in releasing inhibition on muscles to allow movement to occur (Gerfen & Wilson, 1996). Particular attention is paid to the role of the immune system, with children who have developed OCD or tic disorders following group A beta-haemolytic streptococcal infections (Garvey, Giedd, & Swedo, 1998: cited in Shafran, 2001). This has been termed as a paediatric auto-immune neuropsychiatric disorder associated with streptococcal infection (PANDAS). Antibodies that are produced in response to the infection are suggested to cross react with the basal ganglia and lead to OCD or tics in children who are genetically susceptible (Garvey et al., 1998: cited in Shafran, 2001). Support for this theory comes from increased numbers of antibodies found in children with tic disorders versus normal controls (Kiessling, Marcotte, & Culpepper, 1993: cited in Shafran, 2001) and the high rate of OCD in Sydenham's chorea (Swedo, Rapoport, Leonard, Lenane, & Cheslow, 1989: cited in Shafran, 2001). Whilst this might explain the occurrence of compulsions, it has difficulty explaining the occurrence of obsessions, unless they can be considered as rationalisation of the compulsion (Bolton, 1996). With obsessions and compulsions usually being linked to areas such as checking, washing, repeating and touching (Shafran, 2001), it seems strange that neurological damage would be consistently so specific
in its impact on daily functioning.

The main adult theory of OCD views the disorder as arising from the maladaptive appraisal of normal intrusions (thoughts, images, ideas, or impulses) (Salkovskis, Wroe, Gledhill, Morrison, Forrester, Richards, Reynolds, & Thorpe, 2000), for example that may concern harming others, or exposure to contamination (Clark, 2000). The theory proposes that people with OCD interpret the intrusions as the person being responsible for harm occurring to themselves or others. This then leads to “neutralising” behaviours to prevent the feared event from occurring, such as compulsive checking, washing or engaging in rituals. Assumptions formed from early life experience, relating to responsibility, harm and also about the meaning of the intrusive thoughts are also implicated in the adult model (Salkovskis et al., 2000). Examples include the belief that thinking something (e.g. stabbing your partner) is as bad as doing it, or not acting to prevent a danger that you foresee makes you responsible for that possible harm (Salkovskis et al., 2000). Selective attention to threat, trying to suppress the intrusions and seeking reassurance can also be seen to maintain the anxiety (Salkovskis et al., 2000). Figure 1. shows the cognitive model of obsessive-compulsive disorder. (Salkovskis et al., 2000).
Early experiences
(making you vulnerable to OCD)

Critical incidents
(what started the OCD off)

Figure 1.

Thus the main adult theoretical model views OCD as emanating from early experience and the development of beliefs. The child theory considers the aetiology of OCD as possibly
neurological in origin. However, children tend to have less insight into their disorder than adults (Foa & Kozak, 1995). This makes it harder to assess whether belief systems and cognitions are involved in the origin and maintenance of OCD in children. This difference could be due to cognitive immaturity in children (Geller et al., 1998).

There is a large difference in the amount of research into the adult theory of OCD, whereas the child literature is very lacking. The neurobehavioural hypothesis is not easily testable (Shafran, 1998). Where the two theoretical stances overlap is with the theory of maintenance of the disorder and the subsequent treatment.

**Similarities in adult and child theories of OCD**

Adult theory of OCD explains people engaging in compulsions as a means to prevent a feared consequence, usually of harm to self or others (Salkovskis et al., 2000). Similarities have been made with "magical thinking" in children, where children perceive that they have control over actions which they do not. This can be considered as being a pre-rational developmental stage (Bolton, 1996). As children develop, they acquire more rational thought. This could be likened to beliefs in the adult cognitive model about over-responsibility for actions. Magical thinking can still be seen in adults, in the form of superstition, which like compulsions serve to lessen anxiety and increase control over events (Bolton, 1996). However, superstitions in children are distinct from obsessions. They are not as distressing, do not last as long and do not interfere with activities (Leonard, 1989: cited in Bolton, 1996).

Compulsions can be seen to play a role in the maintenance of OCD in both children and adolescents. Whether obsessions trigger compulsions, or obsessions follow compulsions as a form of rationalisation, they seem to become associated with the lessening of anxiety. Exposing people to the feared stimuli and preventing them from carrying out the compulsions forms the basis of treatment for both children and adults (Shafran, 1998). There are also certain differences in the approaches, which will also be discussed.

**Similarities in the treatment of adult and childhood OCD**

For both children and adults, cognitive behaviour therapy is seen as the treatment of choice (Clark, 2000; March, Franklin, Nelson, & Foa, 2001). Exposure to the feared stimuli (e.g. touching the sole of a shoe that the person fears is contaminated and has been avoiding) and preventing the person from performing the compulsion (e.g. washing their hands) (response prevention) form the basis of the approach in both adults and children (Shafran, 2001).
Habituation of the anxiety will occur, as repeated exposure to the stimulus will be associated with lessening anxiety (Clark, 2000). Reviews suggest that approximately 80% of patients show an 80% reduction in symptom severity after exposure and response prevention (ERP) (Foa, Franklin, & Kozak, 1998: cited in Clark, 2000).

With children, ERP is the main component of CBT with some adaptations (Shafran, 1998). The child may build up preventing the response or compulsion for 5 minutes, 15 minutes etc. and the child may use a fear thermometer to assess the amount of anxiety when not performing the compulsion (Shafran, 1998). Franklin, Kozak, Cashman, Coles, Rheingold, and Foa, 1998: cited in March et al., 2001) examining the efficacy of CBT with 14 children, found a mean reduction of 67% on scores on the Yale-Brown Obsessive-Compulsive Scale (CY-BOCS) at post-treatment and 62% at 9 month follow-up. This is the main measure of efficacy in child OCD studies (March et al., 2001). This treatment involved exposure and ritual prevention. However, eight children were currently medicated with selective serotonin reuptake inhibitors (SSRI), which is the pharmacological treatment of choice (Williams & Allsop, 1999). There were no differences though in children who were medicated or not. Evidence for the effectiveness of CBT with children is weak and needs to be compared against other interventions (March et al., 2001). Whilst CBT is considered effective in both children and adults, the CBT involved has differences. This difference is the increased cognitive emphasis in CBT with the adult population (e.g. Salkovskis et al., 2000).

**Differences in the treatment of adult and child OCD**

A major difference in the treatment of adult OCD with CBT is the greater focus on cognitive elements (Shafran, 1998). Cognitive techniques, such as Socratic questioning, identification of negative automatic thoughts, evidence gathering and behavioural experiments to challenge the client’s belief that their obsession is threatening and must be controlled in order to prevent harm (Clark, 2000). The client’s appraisal that they are responsible to prevent the harm to themselves or others is a key feature of dysfunctional beliefs in adults with OCD (Salkovskis et al., 2000). In CBT with children, little emphasis appears to be placed on the cognitive element (e.g. March et al., 2001). The cognitive element consists of self-talk or “bossing back” OCD (March & Mulle, 1996) allowing the child to gain control over the OCD. OCD is described to children as “brain hiccups”. In this sense, OCD is externalised, taking blame away from the child (White & Epston, 1990: cited in March & Mulle, 1996). There is no consideration of the children’s beliefs about being responsible for preventing harm, even though childhood obsessions seem to be very similar to adult themes e.g. concerning contamination.
and checking (Shafran, 2001). This may be due to perceiving children as not cognitively
developed enough to have insight into their obsessions (Foa & Kozak, 1995). This may be as
a result of the diagnostic criteria of childhood OCD, which does not require insight into the
condition (American Psychiatric Association, 1994) and the difficulty in assessing cognitions
in children. Children may be reluctant to share their worries (Kendall & Chansky, 1991).
This may be even more so in OCD where someone may fear having those thoughts or
intrusions in the first place. Another possible difference in children may be that their fear is
more present-orientated, due to more concrete thinking (Carr, 1999). With adults with OCD,
the anxiety is connected with responsibility for an event in the future, possibly very far away,
for example blasphemous thoughts leading to eternal damnation (Salkovskis, 1996).
However, from ages 5-7 children develop a capacity to think in concrete logical terms and
may develop “media-based” fears of disease and epidemic (Carr, 1999), which may be related
to fear of contamination in OCD.

A more systemic treatment approach is also taken with children. Parents are included in at
least two treatment sessions, to assist the child in not completing the compulsions and
rewarding them for not doing so (March et al., 2001). Rates of first-degree relatives of
children and adolescents with OCD are higher in children than adults, although the majority
affected do not have a first-degree relative with the disorder (Pauls, Alsobrook, Goodman,
Rasmussen & Leckman, 1995: cited in Shafran, 2001). However, the effectiveness of
involving the family in interventions versus individual interventions has not been investigated.

Conclusion: OCD in childhood and adulthood
Differences do exist between the theory and treatment of OCD in children and adults. The
neurobehavioural approach to childhood OCD differs from the more cognitive behavioural
approach to OCD in adults. Similarities in terms of magical thinking and responsibility have
been discussed, as well as the overlapping behavioural elements. Therefore, it does not seem
that OCD is fundamentally different in children and adults. Greater integration of theory and
treatment, seems to be important to develop effective treatment for OCD, linked to a strong
theoretical base (Shafran, 2001). Research into adult OCD, particularly the cognitive model
(Salkovskis et al., 2000) is the most empirically tested and supported, yet the
neurobehavioural approach to OCD is more dominant in children (Shafran, 2001).
Social phobia

Social phobia is "a marked and persistent fear of social or performance situations in which embarrassment may occur" (American Psychiatric Association, 1994). Greater than 13% of people are believed to meet diagnostic criteria for social phobia at some point in their lives (Kessler, McGonagle, Zhao, Nelson, Hughes, Eshelman, Wittchen, & Kendler, 1994: cited in Rapee & Heimberg, 1997). Social phobia has a lower mean age of onset than other anxiety disorders of 15.5 years of age (Kashdan & Herbert, 2001). Social phobia has lagged behind other disorders in terms of research, probably as a result of it only being included more recently as a formal psychiatric diagnosis (Rapee & Heimberg, 1997). The disorder may have been minimised, due to the common experience of social anxiety (Zerbe, 1994). Presentation may differ in children, adolescents and adults (Kashdan & Herbert, 2001). Children may present with irritability, crying, inflexibility, or somatic symptoms, whereas adolescents may present with fighting, truancy, or antisocial behaviour. Does the theory and treatment of social phobia consider it as fundamentally different in childhood and adulthood?

Similarities in the theory of adult and child social phobia

The most dominant understanding of social phobia draws from cognitive and behavioural theories. A cognitive behavioural model has good empirical support with both adult and child social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997; Velting & Albano, 2001; Spence, Donovan, & Brechman-Toussaint, 1999). The childhood theory of social phobia considers the majority of aspects of the adult theory.

The key component of the adult model of social phobia considers people seeing themselves as social objects and therefore focusing their attention on themselves, when there is a threat of being evaluated by others (Rapee & Heimberg, 1997). They believe that others view them as they perceive themselves, i.e. performing badly and appearing very anxious (Clark & Wells, 1995). Due to self-focused attention, adults with social phobia fail to spot signs of approval from the audience (Rapee & Heimberg, 1997). The unique aspect of social phobia, is that the feared occurrence can occur, unlike other anxiety disorders. Anxiety can lead to poorer performance (blushing, unsteady voice) and also appearing less friendly in social situations, by making less eye contact or by not revealing much personal information (Clark & Wells, 1995). Adults with social phobia also appear to engage in safety-behaviours to prevent feared outcomes, e.g. gripping their glass tightly when they are down the pub, to prevent people from seeing them shaking. These can actually increase the feared behaviour, by making the person shake even more (Clark & Wells, 1995). Before feared events, adults with social phobia...
appear to have a biased recall of past failures and imagine present failure. They also tend to tease apart their performance afterwards, focusing on negative aspects (Clark & Wells, 1995). Dysfunctional assumptions (if I make a mistake others will reject me) and self-schemata (I am a failure) are also considered as critical in the adult cognitive model of social phobia. Figure 2. shows the model of social phobia by Clark & Wells (1995) drawn upon in this essay.

\[ \text{SOCIAL SITUATION} \]

\[ \text{Activates assumptions} \]

\[ \text{Perceived social danger} \]

\[ \text{PROCESSING OF SELF AS SOCIAL OBJECT} \]

\[ \text{Behavioural symptoms} \]

\[ \text{Somatic and cognitive symptoms} \]

\[ \text{Figure 2.} \]

The mean age of onset of social phobia is considered to be in adolescence (Turner, Beidel, Cooley, Woody, & Messer, 1994). Therefore, there is considerable overlap between the adult and child theories of social phobia. Developmental theory suggests that children are able to consider other people's perspectives, foresee and become concerned about negative evaluation around age eight (Bennet & Gillingham, 1991: cited in Velting & Albano, 2001). During adolescence, children become aware of their appearance and behaviour becoming a source of evaluation (Crozier & Burnham, 1990: cited in Velting & Albano, 2001).

Similar features of the cognitive model have been found in both children and adults. Clark and Wells (1995) report that adults with social phobia have been found to interpret ambiguous social situations more negatively and negative situations more catastrophically than controls.
They have also found more negative self-evaluative thoughts (e.g. I’m boring), although not regarding others disliking them. Adults with social phobia have been rated by observers to have performed less well than controls on social tasks, but still to have overestimated their poor performance (Stopa & Clark, 1993). Lucock and Salkovskis (1988) have found cognitive distortions in adults that are specific to socially evaluative situations and do not represent a general negative bias.

Spence, Donovan, and Brechman-Toussaint (1999) also found a higher level of negative self-talk with children with social phobia. This was on tasks that involved social evaluation, such as reading out loud and performing role-plays that required the children to be assertive. Children with social phobia also expected to perform less well than non-anxious controls and evaluated their performance afterwards more negatively. Children with social phobia were also less likely to receive positive outcomes from their interactions with peers, such as being invited to parties. Epkins (1996) also found higher levels of negative cognitions in socially anxious children than non-anxious controls. Epkins (1996) found content specificity in socially anxious children versus dysphoric children, as well as personalisation and overgeneralisation thinking biases. However, Epkin’s sample represents children with social anxiety, rather than diagnosed social phobia. No research has investigated safety-behaviours in children and adolescents. If they exist, they may be less sophisticated, due to cognitive development, or overt avoidance may be central in younger children.

Differences in the theory of adult and child social phobia

Adult theory focuses more on cognitive biases, self-focused attention and safety behaviours that may lead to impaired performance in social situations and lead to confirmation of poor expectations of performance (e.g. Clark & Wells, 1995). The theory of social phobia in children considers deficits in actual social skills existing, as well as distorted thinking (Spence et al., 1999). Spence et al. (1999) found that children with social phobia were rated as less socially skilled than non-anxious children and were less likely to choose assertive responses on an assertiveness questionnaire. They responded with fewer words when prompted, took part in fewer school social interactions and initiated social interactions less frequently. Spence et al. (1999) propose that deficits in social skills lead to reduced success in social situations and subsequent negative expectations. Avoidance of situations may then accentuate the problem by providing limited opportunity to practice the limited social skills. It is uncertain whether actual deficits exist. Rapee and Heimberg (1997) suggest that social skills deficits in adults may not be pervasive and may be linked to specific situations without clearly
defined rules. People with social phobia may perform well on tasks that require less working memory, e.g. giving a speech compared to socialising at a party, as anxiety can impair performance on tasks necessitating high levels of working memory (Eysenck, 1991: cited in Rapee & Heimberg, 1997). Stopa and Clark (1993) found that observers rated adults with social phobia as more socially negative than controls and recommended training in conversational skills. However, it is uncertain in the adult theory whether social skills deficits exist before the onset of anxiety, or are a consequence of the anxiety, self-focused attention and safety behaviours. Rapee and Heimberg (1997) only acknowledge the possibility of social skills deficit in their model of social phobia if the person has chronically avoided social situations leading to an underdevelopment of social skills.

Some adults with social phobia report childhood shyness (Clark & Wells, 1995). It is possible that social phobia may be just shyness in childhood. However, people who are shy tend to pay attention to cues from their audience and soon realise that people are interested in them (Clark & Wells, 1995). Essau, Conradt, and Peterman (1999) found that 51% of 12-17 year olds in a community sample had at least one social fear. However, Wittchen, Stein, and Kessler (1999) found that when you looked at social phobia only 9.5% of males and 4.9% of females met this criteria. However, the age range of this sample was 14-24 years old and so not limited to children.

Similarities in the treatment of adult and child social phobia
Cognitive behaviour therapy has again been transferred from the adult field into working with (Kashdan & Herbert, 2001). It consists of psychoeducation about anxiety, exposure, somatic management techniques and developmentally suitable cognitive restructuring (Velting & Albano, 2001). The treatment format for social phobia appears to be largely in a group format for both adults and children (Chambless & Hope, 1996; Kashdan & Herbert, 2001). Perhaps this is due to the added bonus of the social exposure that comes with being in a group. However, Lucas and Tech (1993: cited in Chambless and Hope, 1996) made a random comparison between group and individual therapy with adults and found equal success.

The effective components of treatment with both children and adults with CBT remain uncertain. For adults, the group CBT (CBGT) designed for social phobia (Heimberg, Dodge, Hope, Kennedy, Zollo, & Becker, 1990) has unconvincing evidence to support the presumed cognitive mechanism of change. According to the cognitive model, anxiety and behaviour should be associated with a change in cognitions. Comparing CBGT against a control
treatment of educational supportive group psychotherapy (ES), CBGT participants had fewer negative self-statements at 6-month follow-up than the ES group (5% vs. 48%). At 5 years follow-up, the number of negative self-statements had increased in the CBGT group and decreased slightly in the ES group (34% vs. 42%). Although the CBGT group continued to function well, it is uncertain how much the role of cognitions played in this maintenance at long term follow-up (Heimberg, Salzman, Holt, & Blendell, 1993). Group CBT for adolescents (CBGT-A, Albano, Martin, Holt, Heimberg, & Barlow, 1995: cited in Velting & Albano, 2001) was adapted from CGBT for adult social phobia (Heimberg et al., 1990). With adolescents, no study has compared CBGT against another credible from of treatment (Kashdan & Herbert, 2001). If the adult literature is uncertain, then the child literature based on this approach is even more so.

Differences in the treatment of adult and child social phobia
The main difference again seems to be the added focus of social skills training in the treatment of social phobia in children. CBGT focused on identifying and challenging cognitions, exposure and controlling maladaptive strategies before and during exposure sessions and for homework (Heimberg et al., 1993). CGBT-A included social skills training, such as smiling, maintaining eye contact, speaking at an appropriate volume, asking questions and being assertive (Albano & Barlow, 1996). Support for this approach in children is still far from convincing. Hayward, Varady, Albano, Thieneman, Henderson, & Shatzburg (2000: cited in Kashdan & Herbert, 2001) used CBGT with 35 female adolescents versus a waitlist control. They found that 45% of the treatment group no longer met diagnostic criteria for social phobia at post-treatment versus 5% of the wait list group. There was no comparison treatment, so this change cannot be attributed to the treatment, but only doing something versus not doing anything. Indeed, at 1-year follow-up, there were no longer significant differences between the treatment and no treatment group.

Social effectiveness therapy for children (SET-C, Beidel & Turner, 1998) has been designed for pre-adolescent children (8-12 yrs) with social phobia. The main focus is on practising social skills and exposure sessions. Peers from the community are invited to take part to give realistic practice of social skills and management of anxiety (Beidel & Turner, 1998). Practice of social skills is included. Perhaps due to the younger age group, there is no focus on cognitions. Beidel, Turner, and Morris (in press: cited in Kashdan and Herbert, 2001) evaluated SET-C with 36, 8-12 year olds against a credible control treatment involving exposure with 31 children. At post-treatment, 67% no longer met criteria for social phobia.
versus 5% in the control treatment group. At 6 months follow-up, 85% no longer met criteria for social phobia, but no figure is given for the alternative treatment group.

Whether it is better to include more of a cognitive component in children or adolescents as well as social skills, or whether social skills training should be incorporated into adult treatment of social phobia may not actually be important. Mersch (1995), found that an integrated treatment approach with adults including actual exposure, social skills training and rational emotive therapy (Ellis’s version of Beck’s cognitive therapy) was no more effective than exposure alone, although both were more effective than a wait list control. However, clients perceived the exposure to be more credible that the combined treatment, which may well have affect the outcome (Mersch, 1995). This has not been investigated in a child or adolescent population.

Systemic factors, such as the role of the family in maintaining the disorder have also been considered with children. Spence, Donovan, and Brechmann-Toussaint (2000) included parents in a social skills based cognitive behavioural intervention. Parents were able to watch their children taking part in the treatment group through a one way screen and were given their own sessions. They were taught to ignore socially anxious behaviour, not to reinforce avoidance and to model, prompt and praise the child’s practice of skills outside the sessions. Better results were obtained when the parents were involved, but this was not significant (Spence et al., 2000).

Conclusion: social phobia in childhood and adulthood
Social phobia does not seem fundamentally different in childhood and adulthood according to the theory and treatment. The main difference is the emphasis on social skills training, as a result of presumed social skill deficits in children. In adulthood, there is more of an emphasis on the role of dysfunctional cognitions in the disorder. Cognitions play more of a role when the treatment groups are adolescents and adults. The social skills emphasis with younger children perhaps reflects a difficulty in identifying them in the childhood anxiety disorders (Kendall & Chansky, 1991). Actual social skills deficits in the adult form may also be overlooked, presuming that reduced performance is the result of anxiety, cognitions and safety behaviours. The difference may also be developmental, assuming that cognitions play more of a role as children mature.
Conclusion

Anxiety disorders in childhood and adulthood do not appear to be fundamentally different, according to the theory and treatment of OCD and social phobia. There are certainly some differences. In OCD, this is particularly between the neurobehavioural theory in children and the adult cognitive theory. There are certainly overlaps in the behavioural treatment, but with more cognitive emphasis in the adult population. With social phobia, the adult cognitive theory has been transferred directly to childhood social phobia. The perspective changes as the children get younger, focusing on a social skills deficit in children before adolescence, with an increasing cognitive emphasis in adolescence and adulthood (Albano & Barlow, 1996; Clark & Wells, 1995). Differences do exist in the presentation of anxiety disorders in childhood and adulthood. Perhaps this is as a result of maturation. However, it is important not to assume that what works for adults necessarily will work for children with some adaptations. The adult field of anxiety disorders is not convincingly strong. The role of cognitions in adult disorders is only implicated by association, not by causality and is likely to be only one aspect of a more complicated picture. Research with childhood anxiety disorders has lagged behind the adult field. Therefore, it is not surprising that theory and successful treatment with adults has been adapted for children (Kashdan & Herbert, 2001). Childhood theories, for example with OCD, do not easily equate with the treatment borrowed from the adult approach (e.g. March & Mulle, 1996). In social phobia, the role of social skills and cognitions is uncertain. Increased research in the area of children is needed, to achieve better empirical support for the theory and treatment of childhood anxiety disorders.
References


Specialist Essay

"Neuroimaging – a threat to neuropsychology?"

Year 2

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Introduction

Clinical neuropsychology is defined as "an applied science concerned with the behavioural expression of brain dysfunction" (Lezak, 1995). In attempting to understand the effects of brain dysfunction on behavioural and psychological functioning, it has drawn on areas such as animal lesion studies, the effects of human brain lesions, both surgical, traumatic and neurological in origin and from areas of normal brain functioning, such as intellectual functioning and psychometrics (Kolb & Wishaw, 1996). This combination of being able to measure brain function together with knowledge of selective brain damage has led to many applications of neuropsychology. Two areas where neuropsychology is frequently involved, is in the diagnosis of dementias, such as Alzheimer's disease (Zakzanis, 1998) and assessing cognitive outcome in traumatic brain injury (Ponsford, 1995).

However, the field of neuropsychology is threatened by the development of technology that allows clinicians to view the brain from structural and functional points of view. This is the advent of neuroimaging. To some extent, this excitement in neuroimaging has overshadowed the utility and sensitivity of neuropsychological assessment. Some infer that neuropsychology occupies a subordinate position to neuroimaging (American Academy of Neurology Therapeutics & Technology Assessment Subcommittee, 1996). This essay will discuss the threat of this new technology to neuropsychology, in particular focusing on the diagnosis of Alzheimer's disease and assessment of traumatic brain injury. The neuroimaging techniques will first be explained before comparing neuropsychology and neuroimaging across the areas identified. The essay will focus on the adult literature. Neuroimaging techniques will be restricted to Computerised Tomography (CT), Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), Single Photon Emission Computed Tomography (SPECT) and Functional Magnetic Resonance Imaging (fMRI), due to common usage and present and future utility. The exact technical mechanisms of these procedures are beyond the scope of this essay.

Neuroimaging

CT scans involve transmitting a narrow beam of X-rays through the brain at various angles with a computer being able to create a structural image of the brain based on the absorption rate of different structures within the head (Lishman, 1998). Images are displayed using a grey scale in which the greatest absorption of X-rays is represented as white and the least as black. For example, bone is white, water is grey and air is black (Rutledge, 1989). CT scans are useful for identifying conspicuous neurological abnormalities, such as meningeal tumours,
acute intracranial haemorrhages, calcified lesions, and parenchymal infarction (McConnell, 1998).

MRI works by stimulating areas of the brain with radiofrequency (RF) waves. These magnetic waves energise hydrogen atoms causing them to align or "spin". When the RF source is turned off energy is released and a receiver coil detects the energy, giving information about the density of the atoms and their chemical environment. A computer then processes this information into images (Rutledge, 1989). MRI has better sensitivity than CT (McAllister, Sparling, Flashman, & Saykin, 2001) and is useful in evaluating white matter in demyelinating disorders, dementia, infarction, neoplastic disease, vascular malformations and degenerative disease (McConnell, 1998).

Functional techniques offer the benefit of detecting changes in brain functioning, such as levels of activation and metabolism beyond observable structural changes.

PET involves participants ingesting glucose containing very short acting radioisotopes. As brain activity increases, so does its glucose usage, which can then be measured in terms of increased radioactivity by the scanning equipment. The isotopes have a very short life, lasting only a few minutes, meaning that there is no harm to the brain (Kolb & Wishaw, 1996).

SPECT also involves administering radioisotopes to participants with longer half-lives, such as xenon. The technique relies on detecting blood flow rather than oxygen uptake. It is less accurate than PET, but provides better quality of image (Lishman, 1998).

fMRI incorporates the positive aspects of all the above techniques in that it can capture both structural and temporal aspects. fMRI is able to monitor changes in levels of brain oxygenation presumed to result from functional activation of brain areas. Functional images are created due to the levels of oxygen carried by haemoglobin affecting the magnetic properties of blood (Kolb & Wishaw, 1996).

Alzheimer's disease (AD)
AD accounts for more than 50% of all dementias (Fields, 1998). It is a progressive disorder characterised in the early stages by failing memory, muddled inefficiency and spatial disorientation. This disease progresses to difficulties with language expression and comprehension (dysphasia), inability to perform intentional movements (apraxia) and
problems of recognition (agnosia). Personality and mood changes may also be evident. In the final stage the patient becomes bedridden and doubly incontinent, with bodily wasting and possible epileptic seizures (Lishman, 1998).

Histological markers include deformed axon terminals “senile plaques,” containing an accumulation of the protein “amyloid.” These are detected throughout the cerebral cortex, hippocampus and other forebrain structures. Few plaques are seen in normal brains (Beatty, 1995). Neurofibrillary tangles are also present, which consist of pathological webs of neurofilaments within nerve cells. Again, these are prominent in the forebrain, hippocampus and cortical pyramidal cells (Beatty, 1995).

Early detection and diagnosis of AD is important for the management and treatment of the condition. Differentiating AD from other neurological or functional disorders, such as depression which have associated memory complaints has important implications for treatment options. Recent advances in pharmacological treatment with drugs such as Aricept are believed to offer some improvement of functioning in AD in the early stages, although there is still disease progression (Fields, 1998).

Application of Neuroimaging

Neuroimaging’s contribution largely comes from detecting brain atrophy in AD.

*Cortical and ventricular atrophy*

Significant brain atrophy has been observed in patients with AD on CT scans and has therefore been used as a diagnostic marker. Of particular interest is the size of the brain cavities filled with cerebrospinal fluid “ventricles” and the “sulci” (external areas of cortex where brain is indented). Jacoby and Levy (1980) found greater ventricular and sulcal size in age-matched controls than in patients with dementia. More precisely, Burns, Jacoby, Philpot, and Levy (1991) found that both ventricular and cortical atrophy decreased over a 12-month period in AD, but that ventricular atrophy was more associated with memory decline.

However, there are difficulties focusing on such a gross measure as cortical and ventricular atrophy, as increase in ventricular size is not only associated with AD, it is a normal aspect of ageing. Barron, Jacobs, and Kinkel (1976: cited in Lishman, 1998) studying CT scans found a gradual increase in ventricular size from ages 50-60 and a dramatic increase from age 70. As age increased, so did the variability of ventricular size. Further more, patients greater than
eighty years old with dementia are significantly less likely to have large ventricles (Jacoby & Levy, 1980), making differentiation in older patients even harder. Cerebral atrophy alone is not specific to AD and has also been found in patients without dementia, with epilepsy and alcoholism (Lishman, 1998). Dolan, Calloway, Thacker, and Mann (1986) found increased ventricle size in patients with a history of depression compared to controls, with the differences being greater in the middle-aged and the elderly. Consequently, CT's contribution to AD is more restricted to ruling out potentially treatable causes of dementia, such as hydrocephalus or tumour, with MRI providing the main diagnostic tool (Scheltens & Dorf, 2000).

**Medial temporal lobe atrophy (MTA)**

Memory difficulties are reported as the earliest feature, preceding mood and behaviour changes and distinguish AD from other dementing conditions (Lishman, 1998). For this reason it is unsurprising that a lot of research has focused on the early memory changes to aid in differential diagnosis of AD. The medial temporal lobes are the area of the greatest interest, which incorporate structures such as the hippocampus, parahippocampal gyrus and subiculum. These structures have a crucial role in declarative memory (memory that is consciously accessible, Parkin, 1997). It appears that the hippocampus becomes functionally disconnected in AD. Cell death in the entorhinal cortex largely deprives the hippocampus of sensory input, whilst cell death in the area of the subiculum and adjacent pyramidal cells of the hippocampus damages hippocampal output pathways (Hyman, Van Hoesen, Damasio, & Barnes, 1984: cited in Beatty, 1995).

MRI's contribution has focused on the visible MTA usually observed in the disorder, which is highly predictable of AD (Scheltens & Dorf, 2000). Patients with AD have been shown to have significantly higher degrees of MTA than controls (Scheltens, Leys, Barkof, Huglo, Weinstein, Vermersch, Kuiper, Steinling, Wolters, & Valk, 1992). Frisoni, Laakso, Beltramello, Geroldi, Bianchetti, Soininen, and Trabucchi (1999) were also able to differentiate AD from frontotemporal dementia (FTD), where there is greater involvement of the frontal cortex. Sensitivity was 80% on the basis of hippocampal volume, but equal entorhinal cortex atrophy was found in the medial temporal lobes in both AD and FTD. The lack of sensitivity for entorhinal cortex atrophy is surprising, considering that it is considered a primary site of cell loss in AD (Hyman et al., 1984: cited in Beatty, 1995). In addition, Bobinski, de Leon, Wegiel, Desanti, Convit, Saint Louis, Rusinek, and Wisniewski (2000) carried out postmortem MRI on eleven AD and four control brains. They found a significant
correlation between hippocampal, parahippocampal and subiculum volume on MRI and postmortem volume estimation. However, MTA did not completely separate patients with AD from controls. The authors state that this could have been as a result of preclinical AD in some control patients, or that they were observing age-related hippocampal atrophy in some controls. Again age can be a serious confounding factor in neuroimaging, as a significant correlation with age and false-positives was found in the control group, implicating that MRI is less sensitive for diagnosis in older patients. It therefore seems that structural deficits observed on neuroimaging in more precise areas such as the medial temporal lobes may not be sufficiently accurate to reliably distinguish AD from normal ageing.

Functional imaging is not routinely used in the diagnosis of AD, however research has demonstrated characteristic decreased functioning of the temporal and parietal lobes early in the disease and later frontal abnormalities on PET (Mazziotta, Frackowiak, & Phelps, 1992: cited in Small & Leiter, 1998). These are the areas associated with declarative memory, visuospatial ability and executive functions (conceptualisation, planning, inhibition etc.) respectively. Haxby, Grady, Koss, Horwitz, Heston, Schapiro, Friedland, and Rapoport (1990) also demonstrated a potentially predictive element of PET. They found relatively stable asymmetries in the left and right hemispheres of patients with AD that were later associated with the degree of language and visuospatial impairments that developed.

SPECT's diagnostic power appears limited. McKelvey, Bergman, Stern, Rush, Zahirney, and Chertkow (1999: cited in Scheltens and Kopf, 2000) found no SPECT correlations in a group of thirty-six patients with mild cognitive impairment (MCI), of whom 18 progressed to AD. Patients with MCI have memory problems not sufficient for a diagnosis of AD, but are considered at risk of developing AD. Again this was with older adults, where difficulty has been found with other imaging techniques.

It is likely that further research with fMRI will bring increased clarity in identifying preclinical structural and functional changes in patients with AD. Existing research has identified decreased activation in the medial temporal lobes in patients with AD when compared with controls (Small, Perera, DeLaPaz, Mayeux, & Stern, 1999). Reduced activation was also found in four out of the 12 patients with mild cognitive impairment (MCI), possibly indicating early AD. Regretfully there was no follow up of these high-risk patients identified, to see if they did develop AD.
Although neuroimaging can be sensitive in the early detection of AD, there are areas of possible artefact that might appear on images, such as the influence of normal ageing and depression, particularly on structural imaging. Functional imaging, has great promise for the future, but it is too early to judge this enthusiasm. Most of the research to date has focused on the more available structural techniques. Many questions remain to be answered. Will fMRI be confounded by similar factors to structural imaging, such as functional affects of depression and ageing? Activation artefact is also a problem. Studies need to rule out background brain activation not directly involved with the tasks (Fiez, 2001). Functional imaging also requires careful use of neuropsychological tests to evaluate normal and abnormal brain activation. It therefore seems that neuroimaging alone is insufficient to aid in the diagnosis of AD.

Neuropsychological assessment

Characteristic early memory impairment has also been the focus for neuropsychological assessment. Memory impairments associated with AD consist of deficient consolidation of memories, rapid forgetting of new information and worse performance on delayed recall. Recognition memory is also impaired and there is no benefit from providing multi-choice alternatives, or providing cues to aid recall (Pasquier, 1999). This differs from memory impairment associated with subcortical dementias, such as vascular dementia, and pseudodementias such as depression, where the deficit is more with retrieval of memories than actual forgetting. Executive deficits may also be present in AD. Patients experience difficulty shifting conceptual sets and mentally manipulating information, but memory deficits are considered primary (Fields, 1998).

Performance on memory tests have retrospectively differentiated which patients presenting with a mild memory impairment would develop AD, before obvious clinical signs. Albert, Moss, Tanzi, and Jones (2001) conducted a large-scale study over three years with 123 patients with mild memory difficulty recruited from the community. After initial screening and neuropsychological assessment their progress was monitored annually against a control group. Neuropsychological assessment consisted of tests of memory, executive and visuospatial functioning, language, sustained attention and general intelligence. Tests of memory were most predictive – total learning score (number of the 16 words recalled over six successive trials) of a list learning task, (California Verbal Learning Test, CVLT); and immediate visual recall of figures on Wechsler Memory Scale. This adds support to the early pathological changes in the medial temporal lobes. Additionally, two tests of executive
function – part B of the Trail Making Test (set shifting) and total score on Self-Ordering test (sequencing task) were predictive. Verbal fluency – both category and letter fluency were also predictive. Visuospatial ability was not. Executive deficits may arise from alterations in the anterior cingulate gyrus early in AD, which has connections to the entorhinal cortex and the prefrontal cortex (Arikuni, Sako, & Murata, 1994: cited in Albert et al., 2001).

Neuropsychological assessment of memory is further able to differentiate AD from the second most common dementia, vascular dementia (VD), which accounts for 15-25% of dementias (Fields, 1998). VD usually affects subcortical regions, such as the white matter, with accompanying deficits in “procedural memory” (unconscious memory for performing tasks), whereas declarative memory (conscious recollection) is affected in AD. Libon, Bogdanoff, Cloud, Skalina, Giovanetti, Gitlan, and Bonavita (1998) found that patients with AD obtained lower scores with the delayed recall and recognition trials of CVLT (involving declarative memory), and higher scores on a procedural learning task (Pursuit Rotor Learning Test). The opposite profile was obtained for patients with VD. Deficits in recall can also be observed, but unlike AD performance is improved with cueing or on recognition.

Declarative memory disorders are not restricted to AD. They occur in conditions such as alcoholic Korsakoff syndrome (affecting the mamillary bodies and thalamic nuclei), and herpes simplex encephalitis (affecting the temporal and orbitofrontal lobes) (Zakzanis, 2000) meaning that careful consideration of other factors, such as patient history should be equally as important in assessment. Atypical presentation of AD may provide further difficulties. Galton, Patterson, Xureb, and Hodges (2000) describe patients with AD who presented with progressive visual dysfunction or progressive aphasia, both fluent and non-fluent, when fluent aphasia is usually associated with AD. There may also be age-appropriate memory decline. Non-verbal memory tends to be more affected than verbal memory and delayed recall is more affected than immediate recall (Ratcliff & Saxton, 1998), which needs to be differentiated from AD. Age-appropriate memory impairment is usually in the normal range of peers, whereas it is 1 Standard Deviation or more below in AD (Ratcliff & Saxton, 1998).

There also appears to be concurrent support for both neuroimaging and neuropsychological assessment in the literature. Libon et al. (1998) found that VD patients had greater hippocampal formation than AD patients, as well as better performance on a declarative memory performance task. Scheltens et al. (1992) found that the extent of MTA correlated significantly with scores on memory tests including “logical memory” on the Wechsler.
Overall, it seems that both neuroimaging and neuropsychology can be sensitive tools in the diagnosis of AD. However, which is most sensitive? Zakzanis (2000) performed a meta-analysis of studies involving neuropsychological and neuroimaging detection of AD, to evaluate this. Effect sizes revealed that neuropsychological measures were most sensitive for differentiating AD patients from healthy controls, followed by MRI, SPECT and PET, with long-delay free recall on the CVLT being the most sensitive. Total learning score on CVLT was fifth, in contrast to Albert et al. (2001), although this meta-analysis is based on twenty-seven studies rather than just one. A meta-analysis comparing differentiation from other dementias would also be useful.

**AD conclusion**

Present research suggests that neuropsychology's position in the diagnosis of AD is not threatened. However, fMRI has not been studied sufficiently in AD and may pose a future threat. In any case, both neuroimaging and neuropsychology are limited in diagnosis, as a definite diagnosis of AD can only be made histologically, on evidence obtained from biopsy or autopsy (Lishman, 1998). Characteristic neurofibrillary tangles and senile plaques are usually evident on post-mortem, as well as amyloid-like material. Neuroimaging and neuropsychology are only able to detect the structural and functional aspects of the disease and not subtle pathological changes.

**Traumatic Brain Injury (TBI)**

Accurate assessment in TBI is important to know to what extent a patient's injury will affect their performance in everyday life, for example occupationally. If they are involved in a rehabilitation program, it is essential to understand what the patient is capable of achieving and what cognitive deficits need to be worked on or compensated for (Lezak, 1995). Mechanisms of TBI will first be discussed before examining the utility of neuroimaging and neuropsychology.

TBI usually involves an alteration of consciousness, neurological impairment, and cognitive deficits. It is a process that evolves not only hours and days after injury, but also weeks and months later (Lucas, 1998). Involvement in a high velocity impact such as a motor vehicle accident may lead to a variety of brain damage. Brain rotation in TBI may cause both focal and diffuse lesions that are independent of the site of impact (Richardson, 2000). Brain areas
particularly susceptible are the frontal and temporal lobes (Courville, 1950: cited in Richardson, 2000) involved in executive functioning and memory respectively. This is largely due to the soft brain accelerating inside the skull on impact and hitting bony projections of the base of the skull. As well as focal damage, damage to the brain may also occur on the opposite side to the impact ("contrecoup injury") (Richardson, 2000). Brain rotation also exerts pressure on axons, leading to axonal straining, which can lead to downregulation of biochemical functioning of the neuron, or axonal shearing, where axons can be severely damaged and lead to degeneration of surrounding brain areas. This is termed "Diffuse Axonal Injury" (DAI, Richardson, 2000). White matter is particularly susceptible (Bigler, 2001), often producing slowed processing and inefficiency, as in subcortical disorders. As well as primary injury to the brain, secondary injury can occur as a result of brain swelling, due to raised intracranial pressure and intracranial bleeding (Richardson, 2000). TBI can result in varied and extensive areas of brain injury and dysfunction.

**Neuroimaging**

Neuroimaging appears to have an important role in TBI, where diffuse damage to the brain can be observed. However, CT scans may be limited. Mild orbitofrontal and temporal lobe contusions (bruising), which are the most common areas of injury are often missed, and it is also poor at detecting DAI, as well as subcortical lesions in the basal ganglia (Lucas, 1998). CT is superior to MRI in detecting skull fractures (Newberg & Alavi, 1996) and in its ability to detect haemorrhage soon after brain injury, although MRI is able to detect residual haemorrhage not detected by CT three weeks post-injury (Lucas, 1998). MRI is able to detect intracerebral lesions in TBI ranging from minor to severe (Wilson, Wiedmann, Hadley, Condon, Teasdale, & Brooks, 1988).

A normal MRI does not rule out possible microscopic damage. The nature of a lesion several months after the injury may also be more extensive than days after the injury. Wilson et al. (1988) observed discrepancies between MRI scans taken at 21 days post-injury and 5-12 weeks post-injury. Some patients with lesions confined to the cortex and subcortical white matter had developed deep white matter lesions and ventricular enlargement consistent with atrophy on the second scans. Neuroimaging scans taken on the date of injury should not be relied on to assess injury, due to the evolving nature of TBI (Bigler, 2001). Another difficulty with MRI, is that it is sensitive to existing demylinating conditions such as multiple sclerosis (Levin, Amparo, Eisenberg, Williams, High, McArdle, & Weiner, 1987).
Severe TBI, where the patient has prolonged unconsciousness is a particularly difficult area. CT scans may fail to reveal any neurological consequences, even though the patient is unconscious (Markowitsch & Calabresse, 1996).

Structural imaging is unable to detect areas of dysfunctional brain tissue that do not appear visibly damaged. Animal models of mild brain injury have shown that although injury might not cause axonal tears, it can produce neuronal cytoskeleton abnormalities, leading to neuronal dysfunction, but without cell death, therefore appearing normal on structural MRI scans (Bigler, 2001).

Functional assessment in addition to structural examination seems to reveal more extensive or subtle brain dysfunction. Bigler (2001) notes that focal lesions may not be representative of actual brain damage and has shown using functional imaging (SPECT) that the area of physiological disruption exceeds the lesion viewed on MRI. Different imaging techniques are able to detect different brain abnormalities. To obtain an accurate picture it is advisable to obtain information from different imaging techniques, such as SPECT and MRI (Kesler, Adams, & Bigler, 2000). However, in clinical practice, this would be costly and time consuming.

Functional imaging would appear to be a more useful technique for assessing outcome of TBI. There are few studies to date that have used fMRI to study TBI (McAllister, Sparling, Flashman, & Saykin, 2001). McAllister, Saykin, Flashman, Sparling, Johnson, Guerin, Mamourian, Weaver, and Janofsky (1999) have demonstrated that patients with mild TBI have greater cortical activation compared to normal controls on working memory tasks, suggesting a need to compensate for decreased neural efficiency, such as that which is associated with white matter injury. McAllister, Sparling, Flashman, Guerin, Ford, Mamourian, and Saykin (2001: cited in McAllister et al., 2001) have also found a significant reduction in cortical activation when testing encoding and retrieving of a 10 word list learning task in mild TBI patients compared to normal controls.

It seems that at present, neuroimaging’s role in predicting functioning particularly from structural scans is limited, and that any visible damage is likely to have more extensive physiological and functional deficits.
Comparisons with neuropsychological assessment

Studies have repeatedly demonstrated deficits in memory and executive functioning in TBI patients (for example Levin, Amparo, Eisenberg, Williams, High, McArdle & Weiner, 1987; Levin & Goldstein, 1986: cited in Richardson, 2000). Kesler et al. (2000) demonstrated correlations between both MRI and SPECT and neuropsychological assessment, in areas of memory and intellectual functioning (Wechsler Adult Intelligence Scale – Revised, WAIS-R, Wechsler Memory Scale, WMS-R). Memory and intellectual impairments were associated with greater temporal and frontal lobe abnormalities, as well as diffuse cortical atrophy. However, SPECT abnormalities alone were not correlated with neuropsychological functioning (intelligence, memory, planning and visuospatial ability) (Kesler et al., 2000).

Predicting neuropsychological and neurobehavioural outcome on the basis of structural imaging techniques such as CT and MRI would seem highly inaccurate. Bigler (2001) describes three patients with extensive left frontal damage, as assessed by MRI. The scans would predict deficits in executive functioning, as well as impaired performance on tests of verbal fluency and expressive language function, personality change, and probable memory reduction. However, the behavioural outcome was very varied. One patient had right-sided hemiparesis, mildly reduced verbal performance on WAIS-R and slowed responding, but otherwise no problems of executive function. Behavioural outcome seemed more in line with neuropsychological evaluation, as this patient went on to achieve a Masters degree six years after the brain injury. Another patient with seemingly similar structural damage had no observable deficits on a broad range of neuropsychological tests tapping intellectual and executive functioning, memory, language and visuospatial skills. However, behaviourally they had difficulties with personality change and motivation. This demonstrates the complexity of brain functioning and the varied affects that similar visual structural damage can have. Despite this study being restricted to only three patients, it still highlights that there is a danger of falling into the trap of over-localisation, where identical deficits are predicted in individuals on the basis of damage to specific areas of the brain (Bigler, 2001).

The literature shows that there are many factors influencing outcome following TBI. These include age, education, premorbid personality factors, socio-economic factors, lesion size and location (Markowitz & Calabresse, 1996). This was particularly the case for the patients reviewed by Bigler (2001), of whom the most affected in adult life was the patient who incurred the frontal injury at the age of 8, but who came from a high educational and economic background. The other two patients both had their injuries in adulthood and were
both of average to high average intelligence premorbidly, yet one had problems with motivation, whereas the other was sufficiently motivated to obtain a Masters degree post-injury. Neuropsychological outcome can also be criticised, because the less motivated individual had a better outcome on neuropsychological assessment, which did not appear reflected in his everyday functioning.

Just as there are dangers in interpreting a normal neuroimaging scan as representative of normal functioning in an individual, the same can be said for neuropsychology. The ecological validity of neuropsychological assessment (how abilities or deficits in the testing environment are reflected in the living environment) is important to consider. This can be particularly the case for executive functioning, which can be a common deficit in TBI. Executive functioning can be thought of as the patient being able to create an internal structure for behaviour, cognition and mood. Deficits result in the patient being dependent on the environment (Richardson, 2000). Ironically, in assessing for these deficits, the neuropsychologist aims to reduce distractions by testing in a quiet environment. They also provide structure to patients on tasks, giving criteria and rules for the patient to follow. They provide occasional prompts if the patient’s behaviour is incorrect (Sobordone, 1996: cited in Bennett, 2001), thereby supporting these deficits that one is trying to assess. In addition, mistakes can also be made when interpreting test scores if neuropsychologists concretely use quantitative scores without attending to qualitative aspects (Goldstein 1942: cited in Bennett, 2001). For example, a patient could obtain a reasonable score on a task by developing a strategy that was highly inefficient in everyday life.

However, there is reasonable support for the ecological validity of commonly used neuropsychological measures, such as CVLT and the Wisconsin Card Sorting Task (WCST), which is used as a measure of executive functioning, particularly perseveration of response. Kibby, Schmitter-Edgecombe, and Long (1998) found that memory performance on CVLT was predictive of the type of job position held by the patient post-injury. Performance on the WCST was not, although others have found this to be more important as job status increases (Dikmen & Morgan, 1980: cited in Kibby et al., 1998).

TBI conclusion
It appears that functional assessment in the form of neuropsychology may be more informative than structural imaging for TBI, due to damage extending beyond structural changes. New functional imaging techniques hold promise for the future though.
Conclusion

Is neuroimaging a threat to neuropsychology? Different imaging techniques and neuropsychology have been compared in their application to the common referrals of AD and TBI. The evidence for neuroimaging suggests that its accuracy in both diagnosis of AD and outcome in TBI may be more limited than expected. There is room for error in AD, resulting from age-related and functional (pseudo-dementia) structural changes in brain atrophy, which neuropsychology can help clarify. Neuropsychological assessment although more sensitive to memory functioning in AD is not error-free in separating patients with AD from controls. It waits to be seen whether the overlap is due to susceptibility in certain controls to AD. However, neuroimaging can rule out reversible causes of dementia, such as tumours.

In TBI, structural neuroimaging is insufficient to detect the full extent of brain and behavioural dysfunction arising. Neuropsychology has been shown to have good predictive value in outcome, although it is important to remember that there are many factors that influence outcome.

Functional neuroimaging has demonstrated deficient functioning in both AD and TBI. It offers great hope for the future, if it can fulfil its promise of combining structural and functional information. The main difficulty is filtering out irrelevant brain activation (if any activation is irrelevant).

Neuroimaging does not hold a subordinate position to neuroimaging (Bigler, 2001). Nevertheless, neither technique should at present stand on its own. Both make valuable contributions, linking functional and structural information. Clinical decisions should be based on information from several sources, including neuroimaging, neuropsychology and behavioural observations from staff and family.

fMRI is likely to be an important area of the future, bringing a synthesis between neuroimaging and neuropsychology, where standardised neuropsychological probes can be combined with the latest imaging techniques (Bigler, 2001). However, costs are likely to delay common clinical usage for the present.
References


Summary of Clinical Experience
Adult Mental Health Placement Summary

Adult Mental Health Placement

Setting
Community Mental Health Team

Client demographics
- Individual work with 8 clients (6 female, 2 male) ranging in age from 26-73.
- Couple work with a male and female client (aged 44 and 37).

Presenting problems
- Depression
- Anxiety (phobia, health anxiety, relationship)
- Pain
- Psychosis
- Obsessive-compulsive disorder
- Alcohol abuse
- Sexual abuse.
- Interpersonal difficulties.

Assessments
- Team risk assessment proformas.
- Questionnaires including Beck Depression Inventory II, Clinical Outcome in Routine Effectiveness, Dysfunctional Attitude Scale, Rosenberg Self-Esteem inventory, Schema questionnaire.
- Neuropsychological assessment using: WAIS-III, WMS-III, BADS, NART II, FAS, Rey Figure, Token Test.

Intervention
- Cognitive behavioural therapy
- Systemic
- Incorporation of psychoanalytic thinking

Teaching / Presentations
- Presentation on Mindfulness Based Cognitive Therapy to multidisciplinary team.
- Case presentation of a girl with health anxiety and depression related to Crohn’s disease to the multidisciplinary team.
Meetings / visits / observations

- Regular multidisciplinary team meetings.
- Day visit to a therapeutic community for people with personality disorders.
- Visit to rehabilitation services.
- Visit to day hospital and acute admissions ward.
- Day observing Liaison Psychiatry team.
- Attending service meetings on single management of health and social services and proposals for an out of hours service.
People with Learning Disabilities Placement

Setting
Community Team for People with Learning Disabilities.

Client demographics
- Individual work with one male client, aged 23.
- Indirect work with 5 clients (3 male, 2 female) aged 18-56.
- Group work with 7 clients (6 male, 1 female) aged 27-57.

Presenting problems
- Challenging behaviour
- Gilles de la Tourette's syndrome
- Dementia and Down syndrome
- Sexual abuse
- Sex offending
- Fragile X
- Cerebral palsy

Assessment
- Involved in designing a pre and post measure for a keeping safe group.
- Clinical outcome: HONOS-LD, Personal Relatedness Profile.

Intervention
- Psychodynamic
- Behavioural
- Systemic
- Neuropsychological
- Group keeping safe intervention, co-run with two other trainee clinical psychologists.
Teaching / Presentations
- Presentation on the dysexecutive syndrome to a staff team.
- Presentation on Parkinson’s disease to the psychology department.

Meetings / visits / observations
- Regular attendance at team meetings and involvement in case discussions.
- Risk assessment meeting related to inappropriate behaviour.
- Review meeting for sex offender with probation and staff team.
- Attended an after school club for children with learning disabilities.
- Observed clients with profound learning disabilities at a Day Unit.
Child and Family Placement

Setting
- Child and Adolescent Mental Health Team

Client demographics
- Individual work with 5 clients (3 male, 2 female) aged 8-15.
- Indirect work with 2 clients (1 male, 1 female) aged 5 – 8.
- Group work with 9 male clients.

Presenting problems
- Attachment difficulties
- Anxiety
- Bullying
- Migraine
- Enuresis
- Asperger’s syndrome
- ADHD
- Learning disability
- Epilepsy

Assessment
- Clinical effectiveness: HONOS-CA.
- Child Depression Inventory.
- Psychodynamic: Family Relations Test
- Neuropsychological assessment using: WPPSI-R, WISC-III, and WORD.

Intervention
- Cognitive
- Behavioural
- Psychodynamic
- Systemic
- Social skills group for children with social communication disorders, co-run with a primary mental health worker and a clinical psychologist.
Teaching / Presentations
Presentation on the difference between anxiety disorders in children and adults to the multidisciplinary team.

Meetings / visits / observations
- Regular attendance at team meetings.
- Observation of family therapy and involvement in a reflective team.
- Attended a consultation meeting between social services and the family therapy team.
- Observation of multidisciplinary child development service (paediatricians, speech and language therapy, occupational therapy) for children under 5.
- Attendance of school annual appraisal meetings.
- Attended meetings with Chief Executive to discuss trust changes.

Courses and training events
- Quality Protects conference organised by social services to promote quality care and user involvement of young people in services.

Other
- Discussed role of educational psychology with educational psychologist.
- Attended presentation on working with looked after children.
- Attended social services presentation on making appropriate referrals.
Older People Placement Summary

Older People Placement

Settings
- Rehabilitation hospital
- Day hospital

Client Demographics
- Individual and indirect work with 5 clients (4 female, 1 male) aged 86-95.
- Group work with 9 clients (5 female, 4 male) aged 76-87.

Presenting problems
- Worry
- Panic
- Fear of falling
- Life adjustment issues
- Depression and post-stroke depression
- Chronic pain
- Stroke
- Vascular dementia
- Alzheimer’s disease
- Group work involved the co-running and co-development of a multidisciplinary pain management group, and the running of a reminiscence group for people with Alzheimer’s disease.

Assessment
- Questionnaires used: Agoraphobic Cognitions Questionnaire, BAI, Panic Rating Scale, Impact of Events Scale, Brief Assessment Schedule Depression Cards.

Intervention
- Cognitive-behavioural
- Rational emotive behavioural
- Behavioural
- Neuropsychological
Teaching / Presentations
- Presentation on the development and outcome of the multidisciplinary pain management group to an older people special interest group.
- Regular case presentations during joint supervision.

Meetings / visits / observations
- Observation of a physiotherapy session.
- Attended meeting for intermediate care following hospital discharge.

Courses and training events
- Attendance at a Vulnerable Adult Training Day
- Attendance at a seminar for dementia care.
- Attended presentations on fear of falling, psychological treatment of stroke survivors, and running a forgetfulness group for patients with mild memory problems.
Specialist Placement: Acute Adult Neuropsychology

Setting

- Acute Neurosciences hospital

Patient demographics

- Neuropsychological assessment of 19 patients (12 male, 7 female) aged 37-80.

Presenting problems

- Early and late onset Alzheimer’s disease
- Parkinson’s disease
- Progressive supranuclear palsy
- Lewy body dementia
- Vasculitis
- Hydrocephalus
- Tumour
- Head injury
- Motor neurone disease
- Encephalitis
- CADASIL
- anxiety and depression.

Meetings / visits / observations

- Observation of two neurosurgery cases – spina bifida and removal of a meningioma (brain tumour).
- Attended pre-assessment meeting for neurorehabilitation patients.
- Attended Speech and Language case discussion of patient with swallowing difficulties.
- Attended weekly neurology meetings, with case discussions and presentations including neuroimaging data, such as MRI, CT, and angiography.

Courses and training events

- Attended Cognitive Therapy Unplugged Workshop presented by Dr Christine Padeskey.
- Attended academic meeting on “Neuropsychological aspects of epilepsy.”
Specialist Placement: Paediatric Neuropsychology

Setting
- Hospital setting.

Patient demographics
- Neuropsychological assessment of 5 children (3 female, 2 male) aged 4-17.
- Neuropsychological rehabilitation with 1 female patient aged 13.
- Individual and indirect work with one male paediatric psychology patient aged 8.

Presenting problems
- Encephalitis
- Epilepsy (BSPECTS, frontal lobe, temporal lobe)
- Stroke
- Head injury
- Genetic conditions
- Kleine Levin syndrome
- Anxiety

Teaching / Presentations
- Presentation on implicit memory for trauma post head injury was made to the paediatric psychology team.
- Regular case presentations during joint meetings with Paediatric Neurology and during joint supervision.

Meetings / visits / observations
- Regular team meetings with paediatric psychology.
- Joint meetings with Paediatric Neurologists.
- Attendance at neurology ward round.
- Attendance at psychosocial ward round.
- Observation of MRI and EEG.
- Visit to a rehabilitation centre for children with brain injury.
Courses and training events

- Attendance at a Division of Neuropsychology Training Day in Challenging Behaviour.
- Seminars at the Institute of Neurology on Huntington’s and Parkinson’s disease.
- Seminar at the Institute for Cognitive Neuroscience on “Amnesia: the Implicit / Explicit Distinction.”

Research

- Collected data for publication of a case study documenting the neuropsychological recovery of a patient with streptococcal infection.
Clinical Case Report Summaries
Cognitive behavioural assessment and intervention of depression and fear of dying with a woman suffering from Crohn's disease and Chronic Fatigue Syndrome.

Reason for referral
A 27-year old white woman was referred by her GP to the community mental health team with depression and fear of dying associated with a diagnosis of Crohn’s disease and Chronic Fatigue Syndrome.

Presenting problem
She described feeling tearful and depressed in relation to her disease diagnosis and the impact that this had on her life.

Assessment
During the assessment interview, information was gained from her regarding her personal and family history, psychiatric history and issues related to Crohn’s disease and Chronic Fatigue syndrome. She had a history of depression associated with disease diagnosis and disease flare-ups. She believed that the disease would one day kill her. She relied on her family to do things for her, such as getting her meals, doing her washing and providing transport. She believed that if she did things herself, she would be exhausted and that it would ruin her day. She disliked being in a “sick role” and felt that her family maintained her in this role. The Beck Depression Inventory (2nd Edition, BDI-II) and Core Outcome in Routine Effectiveness (CORE) were used as outcome measures. Initial BDI-II scores placed her in the severe depression range. The CORE highlighted difficulties with physical symptoms, trauma, anxiety, depression, and general functioning.

Formulation
A collaborative cognitive-behavioural formulation based on a model of health anxiety was developed. Previous experience related to illness was seen to lead to the development of dysfunctional beliefs that doing activity would be detrimental to her health. Illness flare-ups were seen to activate negative automatic thoughts and maintain her anxiety and depression, along with hypervigilence to illness, avoidance of activity, resting dependent on fatigue levels, and physiological changes, such as reduced energy from inactivity.
Intervention
A collaborative CBT approach was used. Over 5 sessions negative automatic thoughts and dysfunctional beliefs related to her health were collected and challenged, using Socratic questioning and behavioural challenges. Systemic considerations related to the family maintaining her in the sick role were discussed.

Outcome
Despite only a short intervention period due to illness, improvement was observed in the form of increased levels of activity and associated self-esteem, by not being reliant on other people for everything. She started to do more activities around the house and also arranged her own transport on occasions to meet up with friends. BDI-II ratings of depression reduced to moderate depression, despite being admitted to hospital at the time of completing the rating scales. CORE ratings indicated decreased ratings of anxiety, depression, and physical symptoms and an increase in general functioning.
Brief insight-oriented psychotherapy with a 23-year old man with moderate to severe learning disabilities and aggressive behaviour: A psychodynamic approach.

Reason for referral
A 23-year old white man living in a community home for people with learning disabilities was referred to the community team for people with learning disabilities by his care manager, due to his aggressive behaviour towards residents and staff.

Presenting problem
He presented with physical and verbal aggression towards staff and other residents, including swearing at people and threatening to beat them up.

Assessment
During the assessment interview, information was gained regarding his personal and family history, psychiatric history and issues related to Tourette’s syndrome. He had a history of a difficult relationship with his family. He reported experiences of aggression towards him when he was growing up. He also experienced rejection from his parents. Despite them living close-by, they would seldom visit him. His history of Tourette’s diagnosis was uncertain. The Health of the Nation Outcome Scales – Learning Disabilities (HONOS-LD) and Personal Relatedness Profile were used as outcome measures. The HONOS-LD suggested behavioural difficulties, problems associated with mood changes, and problems of attention and concentration. The Personal Relatedness Profile suggested functioning in the paranoid-schizoid position rather than the depressive position.

Formulation
His difficulties were formulated using psychodynamic theory. This was based on a model of personal development in response to a traumatic environment, in particular the areas of emotion regulation, development of attachments and sense of self. His difficulties were viewed as switching from a position of vulnerability, of clinging, fearful behaviour to a position of power, identifying with the aggressor, and re-enacting previous traumatic incidents. Transference and countertransference in relation to current other, therapeutic and past relationships were formulated, based on poor attachment relationships. The influence of Tourette’s syndrome on relationships became an important part of the formulation, although it’s influence on relationships was not initially apparent, for example as a presentation of challenging behaviour, such as swearing, and aggressive outbursts, which were not realised by staff to be out of the client’s control.
Intervention
The intervention consisted of 17 half hour sessions, with their focus on containment and provision of a positive attachment relationship. The individual intervention was accompanied by systemic intervention through the staff team by the trainee's supervisor.

Outcome
Particular changes were observed in the therapeutic transference, once the influence of Tourette's syndrome was recognised and acknowledged, in addition to the containing environment that was provided by the trainee. This was accompanied by a reduction in aggressive behaviour within the staff environment. Post-intervention outcome scores for the HONOS-LD suggested improvement in behaviour and mood changes. The Personal Relatedness Profile suggested greater functioning in the depressive position. However, alternative individual accommodation was still found for the client, due to the dynamics of the staff team. It was hoped that this could have still been made a positive move in terms of greater independence.
Summary of Child and Family Case Report

Behavioural problems with a 5-year-old girl: An attachment perspective.

Reason for referral
A 5-year-old-girl was referred by her health visitor to the child and adolescent mental health service due to aggressive and non-compliant behaviour towards her mother.

Presenting problem
She presented with aggressive behaviour towards her mother, such as kicking, screaming, and hitting.

Assessment
During the assessment interview with both parents and their daughter information was gathered in relation to personal and family history, and psychiatric history. The aggressive behaviour emerged following the birth of her younger sister. Her mother described being unable to get her daughter to do anything, as her daughter would react aggressively towards her. The mother had had previous relationship difficulties with her son from a previous difficult marriage, and had subsequently been depressed. She was concerned that her current relationship was also deteriorating. However, her present husband was very supportive figure. The Health of the Nation Outcome Scales – Children and Adolescents (HONOS-CA) was used, which suggested difficulties with aggressive behaviour, peer relationships and family relationships.

Formulation
The girl’s aggressive behaviour was formulated from an attachment perceptive, considering an insecure attachment between her and her mother. This was associated with decreased self-esteem of the mother from the previous relationship failure with her son, which influenced the way she interacted with her daughter. The systemic influence of the presence of the younger daughter and adjustment of the family role, with less involvement of the mother with the older daughter was also incorporated.

Intervention
The intervention consisted of 6 fortnightly sessions with the parents, based on attachment theory principles and behavioural approaches. It incorporated exploration of the role of the previous attachment relationships and provided insight about the influence of past relationships on current relationship difficulties. Cognitive techniques were also incorporated...
to challenge dysfunctional assumptions about the current relationship. A behavioural program of rewarding good behaviour and ignoring aggressive behaviour was also implemented.

Outcome
Both parents had developed greater insight into the influence of past relationship difficulties on the present, and had led to associated cognitive change. The relationship between mother and daughter had become more relaxed and less confrontational, with both enjoying spending a greater amount of individual time together. Their daughter also started to want to include the younger daughter in activities. The mother’s confidence in dealing with difficult behaviour had additionally increased. Post-intervention scores on the HONOS-CA indicated improvements in family and peer relationships, although ratings of aggressive behaviour did not change.
Neuropsychological assessment of a 95-year-old woman with a history of transient ischaemic attacks.

Reason for referral
This 95-year-old woman was referred by her hospital consultant. She had a history of difficult relationships with care staff who had been supporting her at home, which people attributed to her personality. She had a recent history of transient ischaemic attacks. Her consultant wondered whether there was an organic influence on her personality.

Presenting problem
Nursing staff and family reported aggressive outbursts towards staff if they did not do tasks to this lady’s liking.

Assessment
Information was obtained from the patient, her daughter, and staff using a standardised assessment measure for older people (CAMDEX-R). Nursing staff described her as being very demanding and being verbally aggressive to staff when tasks were not done according to her wishes. According to her daughter, she had a history of difficult relationships throughout her life. She viewed the difficulties as solely related to personality. Her mother had become increasingly stubborn the last 5 years, more indecisive, and more changeable in mood. She was also profoundly hard of hearing. Her daughter did not think that there had been any major cognitive changes.

The patient reported that some nurses and staff were rude to her and did not always treat her and her possessions with dignity. She liked nurses who did that little bit extra for her. She reported that she had some slight difficulty recalling names of less familiar people, but no other cognitive difficulties. She displayed disinhibited behaviour during the assessment session and rapid changes in mood.

Neuropsychological hypotheses
It was hypothesised that she would show neuropsychological deficits associated with 1) transient ischaemic attacks: generalised intellectual decline, slowed processing, poorer recall memory, and possible executive dysfunction, or with 2) vascular dementia: generalised intellectual decline, significant deficits in executive functioning, and significantly poorer recall memory, compared with recognition memory.
Opinion
Neuropsychological performance suggested general cognitive decline, with significant executive deficits in planning and verbal fluency, and impaired memory recall compared with recognition memory. This together with observation of disinhibited behaviour, mood lability and the additional history of transient ischaemic attacks, increased stubbornness, indecisiveness, and mood lability suggested a possible diagnosis of vascular dementia. Premorbid personality and deafness were viewed as contributing factors to the behaviour.

Recommendations
Neuropsychological, behaviour management and communication recommendations were discussed with the nursing staff and family. This included incorporating structure and routine into their approaches to support executive difficulties. Findings also had important implications for staff and carer's in terms of their attribution of her behaviour, which had previously solely been attributed to her personality.
Differential neuropsychological diagnosis of multiple system atrophy or Lewy body disease in a 72-year-old man with a present diagnosis of idiopathic Parkinson’s disease.

Reason for referral
This 72-year-old man was referred by his neurologist. His neurologist was uncertain whether a diagnosis of multiple system atrophy or Lewy body disease would be more appropriate than his present diagnosis of Parkinson’s disease.

Presenting problem
He presented with increased motor slowness, over a period of three years. He had difficulty with fine motor control, decreased speech output, and increased incontinence. He showed much less interest in usual activities, such as reading. He also reported seeing people that were not there, such as images of the devil, and had delusional beliefs about his wife having an affair. He had periodic episodes of acute confusion, attributed to urinary tract infections. He had reacted badly to previous antipsychotic medication to treat his hallucinations and delusions.

Neuropsychological hypotheses
It was expected that his neuropsychological performance would be consistent with 1) Parkinson’s disease: deceased executive functioning, decreased memory recall, but better recognition memory, and impaired motor performance; 2) multiple system atrophy: similar to Parkinson’s disease, but with greater deficits in verbal fluency and motor performance; 3) Lewy body dementia: pronounced visuospatial / visuoperceptual and visuoconstructional deficits, impaired attention, verbal fluency and similar deficits in executive functioning.

Neuropsychological assessment
Standardised measures were used and clinical observation. These included WAIS-III, WMS-III, WATR, VOSP, TEA, D-KEFS, and GNT. He showed significant impairment on visuoperceptual / visuospatial and visuoconstructional tasks, had impaired selective attention, executive deficits, and pronounced motor impairment. He also demonstrated delusional behaviour during the assessment and was observed to have problems with figure ground discrimination on a confrontation naming task.
Opinion
This neuropsychological profile and observations taken together with his past history of reaction to neuroleptic medication, hallucinations and delusions, periods of acute confusion, and incontinence, were suggestive of Lewy body pathology in addition to Parkinson's disease. These findings were communicated to the referring neurologist to assist with treatment for the patient.
Research section
Service Related Research Project

The development of self-efficacy amongst trainee clinical psychologists.

Year 1

June 2001
Abstract
Self-efficacy and state and trait anxiety of 225 trainee clinical psychologists at seven clinical psychology training courses in the south of England were analysed. First, second and third year trainees completed postal questionnaires. Self-efficacy was measured using a version of the Counseling Self-Estimate Inventory (Larson, Suzuki, Gillespie, Potenza, Bechtel, & Toulouse, 1992), adapted for trainee clinical psychologists. Principal component analysis revealed 6 underlying components, which differ slightly to Larson et al. (1992). These were: - 1) core clinical psychology skills; 2) process; 3) therapeutic skills; 4) dealing with difficult client behaviour; 5) cultural competence; and 6) awareness of values. Self-efficacy was found to increase across the years of training, significantly in the 3rd year. Trainees with higher ratings of self-efficacy had lower ratings of both state and trait anxiety, measured by the State-Trait Anxiety Inventory (Spielberger, 1983). The relationship with the 6 components and state and trait anxiety is also discussed. The findings have important implications for clinical psychology training, as self-efficacious trainees are more likely to be able to cope with the demands of training and develop professional identification.
Introduction

Self-efficacy theory and application to clinical psychology training
Self-efficacy, described by Bandura (1977) as, "the conviction that one can successfully execute the behaviour required to produce outcomes," is suggested to be a key factor in human competence and performance accomplishments (Bandura, 1997). To function effectively in an activity requires both skills and the efficacy belief to use them (Bandura, 1997). It is also believed that self-efficacy best develops through actual experience or enactive mastery (Bandura, 1997). Mastery itself is suggested to have particular vocational importance, as it is associated with developing professional identification and commitment to a career (Bucher and Stelling, 1977).

Larson et al. (1992) have developed a standardised questionnaire: the Counseling Self-Estimate Inventory (COSE) to measure self-efficacy amongst trainee counselling psychologists. In a study of 213 counselling psychology trainees, they found that self-efficacy increased as practical experience was gained, and was a significant predictor of trainees' performance. The measure has good reliability with the items being internally consistent ($\alpha = .93$). Larson et al. (1992) state that the validity has some preliminary support in terms of a) being positively related to counsellor performance; b) being negatively related to state and trait anxiety; and c) being able to detect changes across the counsellor practical experience and with different levels of counselling experience.

Professional and psychological adaptation in relation to clinical training
The limited amount of research on trainee clinical psychologist development has so far focused on areas such as professional socialisation (Cheshire, 2000a) or psychological adaptation (Kuyken, Peters, Power, & Lavender, 1998; Kuyken, Peters, Power, Lavender, and Rabe-Hesketh, 2000). Cheshire (2000a) using a semi-structured interview approach found that identification and confidence developed mainly in the third year of training among 39 Scottish trainee clinical psychologists. First year trainees frequently described themselves as "pretend psychologists", feeling uncertain about what they were supposed to be doing in clinical sessions. Second year trainees started to believe in themselves slightly more as "real psychologists", and third year trainees found the last year the time when their confidence really developed.

Cheshire (2000b) also found widespread anxiety in trainee clinical psychologists as they made the transition from assistant psychologist to trainee. She suggests that trainees may be
overwhelmed by the expectations and distress expressed by clients. They may struggle with their own expectations of their clinical performance, even when they have considerable relevant experience. This may at first be as a result of feeling deskilled. Kuyken et al. (1998) in a study of 183 trainees using multiple scales, found that at least 25% of trainees reported significant self-esteem problems, problems adjusting at work and depression and anxiety. Kuyken et al. (2000) followed up the previous study with 167 trainees using the Employee Assistance Program Inventory (EAPI). They reported that levels of psychological distress significantly increased between year one and year two of training. They suggest that there may be a connection between a longstanding difficulty and anxiety. The EAPI is said to have moderate to high concurrent validity with trait anxiety (Anton & Reed: cited in Kuyken et al., 2000). Larson et al. (1992), found that anxiety was also a significant predictor of trainee counselling psychologist performance and that state and trait anxiety on the State Trait Anxiety Inventory (STAI, Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) was negatively correlated with counselling self-efficacy.

Rationale for study
The research so far on self-efficacy amongst trainees has largely concentrated on trainee counselling psychologists. It has yet to be established whether the findings of Larson et al. (1992) would be replicated in a population of clinical psychology trainees. Furthermore, there has as yet been no attempt to ascertain whether other measures of psychological adaptation (such as anxiety) relate to self-reports of self-efficacy amongst clinical psychology trainees. This study aims to address these gaps in the literature.

In particular, this research aims to plot self-efficacy and anxiety cross-sectionally over the three years of clinical psychology training, using a version of the COSE adapted for use with clinical psychology trainees, and the STAI. The relationship between self-efficacy and demographic/experiential factors such as age; gender; and years of relevant work experience before clinical training will also be explored.

Hypotheses
1. Self-efficacy will increase over the three years of clinical psychology training.
2. Self-efficacy will be negatively related to state and trait anxiety.
Method

Design
A mixed within-participant and between participant design was used. The within participant factors were self-efficacy and anxiety (state and trait). The between participant factors were year of training, age, gender, and years of relevant work experience prior to clinical psychology training.

Participants
First year, second year and third year clinical psychology trainees from seven clinical psychology training courses in the south of England were asked to participate. The total available sample was 394.

Measures
The Counselling Self-estimate Inventory (COSE, Larson et al., 1992) was adapted for use with trainee clinical psychologists. This involved the insertion of 6 additional questions that were thought to be relevant to trainee clinical psychologists (see appendix 1). Suggested items came from the author their supervisor, and training criteria outlined in the Surrey course handbook. These items covered: integrating psychological theory, research and practice; research theory and methodology; formulation; use of psychometrics; transferring skills. These items were added in random order to the existing questionnaire. The wording of some of the existing items had to be changed to be relevant to trainee clinical psychologists and also to trainees working with different theoretical orientations. It was thought that some items were particularly slanted towards a psychodynamic orientation and would not be representative of all trainees. (See appendix 1 for all alterations).

The State Trait and Anxiety Inventory (STAI, Spielberger et al., 1983) was also used to provide a measure of state and trait anxiety (see appendix 2). This inventory consists of forty 4-point Likert items, with 20 items measuring state anxiety and 20 items measuring trait anxiety. Higher scores reflect greater state and trait anxiety. Test-retest reliability varies for state anxiety as would be expected (.16 to 62), but is more stable for trait anxiety from .65 to .75. (Spielberger et al., 1983). As state anxiety is expected to change over time the reliability is considered adequate (Spielberger, 1970: cited in Larson et al., 1992).

A demographic form was also constructed by the researcher (see appendix 3) consisting of age, gender, year of training, and years of relevant experience prior to clinical training.
(Relevant experience, academic qualifications, placements experienced on training, and theoretical preference were later excluded due to lack of space).

Procedure
Following approval by the University of Surrey Ethics Committee (see appendix 4), Course Directors at the seven courses were approached by letter (see appendix 5) to obtain their permission to conduct the research with their trainees. Participants were recruited by sending out the COSE, STAI and demographic page to the administrator of the courses that had agreed to participate. Sufficient copies were sent out for all three years of the relevant courses. Each trainee was also sent a covering letter explaining the nature of the research and highlighting the confidentiality (see appendix 6). Trainees were also given a self-addressed envelope to return the questionnaires in. Informed consent was assumed to be reflected in the questionnaire’s return. A second mail shot (see appendix 7) was carried out two weeks after the original mailing, in order to maximise the response rate (Dillman, 1978).
Analyses

Descriptive statistics were used to examine the characteristics of the sample. Principal components analysis (PCA) was used to examine the structure of the self-efficacy questionnaire. Due to significant skewness for state and trait anxiety (see appendix 8), non-parametric statistics (Mann Whitney U and Kruskal Wallis) were used to test for between group differences. Spearman's rank was used for correlations between self-efficacy and anxiety, due to significant skewness with state and trait anxiety.

Results

Response rate

225 (57%) trainees completed the questionnaire, 125 (56%) on the first mail shot and 100 (44%) on the second mail shot.

Descriptive data

Descriptive statistics in relation to age and gender distribution, year of training, and length of work experience prior to clinical training can be found in Tables 1 to 4.

Table 1: Frequencies by age

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<th>Age</th>
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<tr>
<td>under 30</td>
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<tr>
<td>30 plus</td>
<td>38</td>
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Table 2: Frequencies by gender

<table>
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<tr>
<th>Gender</th>
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<tr>
<td>female</td>
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</table>

Training variables

Table 3: Frequencies by year of training

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<th>Year of training</th>
<th>Frequency</th>
<th>Percent</th>
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<td>34.7</td>
</tr>
<tr>
<td>year 3</td>
<td>51</td>
<td>22.7</td>
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</table>
Recoding
Before all analyses, negatively reversed items were recoded, so that higher scores indicate higher estimates of self-efficacy and high anxiety for all items.

Self-efficacy

Principal Component Analysis (PCA)

PCA was conducted to examine the comparability of components within this sample to those reported by Larson et al. (1992), who had initially extracted 14 components and reduced this to 5 components (See appendix 9 for comparison of items). From the 43 self-efficacy items, PCA with varimax rotation yielded 10 components with eigenvalues greater than 1.00, accounting for 60% of the total variance. The eigenvalue for the first component was (11.740, 27% of variance). The components were reduced to 8 factors using Cattell’s scree test (1966: cited in Tabachnick & Fidell, 2001) and then reduced to 6 components, due to only two items in the last two components. Only items with factor loadings above .40 were retained. This appeared to be the best solution to approximate simple structure (Thurstone 1946: cited in Larson et al., 1992). 6 components were identified as follows:

1) Core clinical psychology skills: The questionnaire items loading on this component, seemed to represent skills in research, psychological formulation and integrating psychological theory and practice.

2) Process seemed to depend on the trainee client feedback loop. This depends on the trainee monitoring and reacting to several interactions with a client.

3) Therapeutic skills appeared to reflect having the knowledge to be confident in practice.

4) Difficult client behaviour seemed to involve feeling able to work with people who are unmotivated, suicidal, or indecisive.
5) Cultural competence involved working with clients of different ethnic or social backgrounds.

6) Awareness of values concerned trainee's being aware of bringing biases or values into their work in the form of countertransference.

Components 2, 4, 5, 6 were almost identical to Larson et al. (1992) in terms of the items included and include their title for the component (see appendix 9 for any difference in items, compared to Table 6.).
The correlation and mean and standard deviations (SD) for each item are also presented.

Table 6 shows the loadings for each component and those items that did not have loadings of 0.40 or greater for any factor. The boldface loadings represent those items that loaded only on a particular component. Communalties (h^2) from the PCA, the item total correlation (r_u), the item-factor correlation (r^2), and the corrected item-factor correlation (r^2_corrected) are also presented.

### Table 6: Loadings and Statistics for Each Component

<table>
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<tr>
<th>Item</th>
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<tbody>
<tr>
<td>1</td>
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<td>4</td>
</tr>
<tr>
<td>Core Clinical Psychology Skills</td>
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</tbody>
</table>

Due to the limited scope of this representation, the detailed content of the document is not fully transcribed here. For comprehensive understanding, the full document should be consulted.
I am unsure as to how I deal with clients who appear noncommittal and indecisive.

32. I may have difficulty with clients who do not verbalize their thoughts during the therapy session.

31. I am uncomfortable dealing with clients who appear unmotivated towards mutually determined goals.

30. I feel confident regarding my ability to deal with crisis situations which may arise during therapy sessions - e.g. suicide, alcoholism, abuse, etc.

29. I am confident that I can assess my client's readiness and commitment for change.

28. I feel confident that the wording of both my formulation of the client's situation and suggestions for intervention will be meaningful and not concerned with trivia.

27. I am confident that I will lead my client towards the development and execution of concrete goals to work towards.

26. I am worried that both my formulation and suggestions for intervention may not over time assist the client to be a

25. I am unsure as to how I lead my client towards the development and execution of concrete goals to work.

24. I am confident that I will know when to use open or closed probes, and that these probes will reflect the concerns of the client and not be trivial.

23. I am confident that I will lead my client towards the development and execution of concrete goals to work.

22. I am confident that I will know when to open or close ended probes, and these probes will reflect the concerns of the client and not be trivial.

21. I feel that the content of both my formulation of the client's situation and suggestions for intervention will be meaningful and not concerned with trivia.

20. I am confident that my formulation and suggestions for intervention will be meaningful and not concerned with trivial.

19. I feel that the content of both my formulation of the client's situation and suggestions for intervention will be meaningful and not concerned with trivia.

18. I feel confident that I am assessing my client's readiness and commitment for change.

17. I feel confident that I am assessing my client's readiness and commitment for change.

16. I feel that the content of both my formulation of the client's situation and suggestions for intervention will be meaningful and not concerned with trivia.

15. I feel confident that I have resolved conflicts in my personal life so that they will not interfere with my therapist's role.

14. I am confident that I will appear competent and earn the respect of my client.

13. I am confident that I will appear competent and earn the respect of my client.

12. When using responses like reflecting interpretation, formulation I am confident I will convey to the client:

11. When using responses like reflecting interpretation, formulation I am confident I will convey to the client:

10. I feel that I will respond in a manner that is open to the client rather than interpreting the client's actions and explaining their meaning.

9. I feel that I will respond in a manner that is open to the client rather than interpreting the client's actions and explaining their meaning.

8. I am sure that the content of my responses, i.e. reflection of meaning, clarification, and probing will be an accurate reflection of the client's thoughts and feelings.

7. I am sure that the content of my responses, i.e. reflection of meaning, clarification, and probing will be an accurate reflection of the client's thoughts and feelings.

6. When initiating the end of a session I am positive it will not be in a manner that is abrupt or insensitive and that I will not end the session on time.

5. I am confident that I will respond appropriately to the client in view of where the client will express (my responses) and the session on time.

4. I am confident that I will respond appropriately to the client in view of where the client will express (my responses) and the session on time.

3. When initiating the end of a session I am positive it will not be in a manner that is abrupt or insensitive and that I will not end the session on time.

2. I am confident that I will respond appropriately to the client in view of where the client will express (my responses) and the session on time.

1. I am confident that I will respond appropriately to the client in view of where the client will express (my responses) and the session on time.
28. I believe that I am competent in my administration of psychometric assessment.
25. My assessment of clients' problems may not be as accurate as I would like them to be.
23. I am afraid that I may not understand and properly determine meanings of the client's non-verbal behaviors.

Items deleted based on loadings below .40

### Table 6

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### Table 4

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</table>
Reliability analysis

A reliability analysis of the self-efficacy and the components was then undertaken using Cronbach's alpha. The internal consistency score for the COSE total score and the 6 component scores were: COSE total, $\alpha = .93$; Core clinical psychology skills, $\alpha = .88$; Process, $\alpha = .83$; Therapeutic skills, $\alpha = .82$; Difficult client behaviour, $\alpha = .71$; Cultural, $\alpha = .73$; Awareness of values, $\alpha = .46$. The item total correlations ranged from .47 to .77 (see table 6.).

Demographic influences on self-efficacy

Table 7. shows the mean and standard deviations for the 6 components and total self-efficacy score. (See appendix 10 for all mean ranks data)

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<td>Process</td>
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<td>Therapeutic skills</td>
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<td>Dealing with difficult client behaviour</td>
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</tr>
<tr>
<td>Self-efficacy total</td>
<td>165.49</td>
<td>21.86</td>
</tr>
</tbody>
</table>

Table 7.

Total self-efficacy score

Demographic influences upon self-efficacy ratings were examined by means of Kruskal-Wallis analyses. There was a highly significant difference for year of training, ($H = 18.857$, df = 2, $p< .001$). Post hoc comparisons using Mann Whitney U found a significant difference between years 2 and 3, ($U = 1399.50$, $p = .005$). The mean rank of self-efficacy scores were higher in year 3. There were no significant differences for age ($H = .051$, df = 1, $p > .05$); gender ($H = .003$, df = 1, $p > .05$); or years of relevant work experience ($H = .981$, df = 2, $p > .05$).
Component efficacy scores

1) Core clinical psychology skills
There were significant differences for gender (H = 5.256, df = 1, p = .022) and year of training (H = 18.970, df = 2, p = < .001). The mean rank for males was higher than for females. Mann Whitney U revealed a significant difference between years 3 and 2 and 2 and 1. Year 3 had a higher mean rank than year 2 (U = 1461, p = .011) and year 2 a higher mean rank than year 1 (U = 3094.50, p = .049). There was no significant effect for age (H = 1.823, df = 1, p> .05) or years of relevant work experience (H = 3.242, df = 2, p> .05).

2) Process
Kruskal-Wallis analysis revealed a significant difference for year of training (H = 16.484, df = 2, p< .001). Year 3 had a significantly higher mean rank than year 2 (U = 1268, p = .001). There were no significant differences for age (H = .013, df =1, p> .05); gender (H = .095, df =1, p> .05); and years of relevant work experience prior to clinical training (H = .450, df = 2, p> .05).

3) Therapeutic skills
There was a significant difference for year of training (H = 12.952, df =2, p = .002). Year 3 had a significantly higher mean rank than year 2 (U = 1418.50, p = .006). There were no significant differences for age (H =.244, df =1, p> .05); gender (H = .258, df =1, p> .05); and years of relevant work experience (H = 3.580, df =2, p> .05).

4) Dealing with difficult client behaviour
There were no significant differences for age (H =.743, df =1, p> .05); gender (H = .258, df = 1, p> .05); year of training (H = 3.547, df = 2, p> .05); and years of relevant work experience (H = .429, df = 2, p> .05).

5) Cultural competence
There were no significant differences for age (H =.044, df =1, p> .05); gender (H = .412, df = 1, p> .05); year of training (H = 3.547, df = 2, p> .05); and years of relevant work experience (H = 2.508, df = 2, p> .05).

6) Awareness of values
There were no significant differences for age (H = .000, df =1, p> .05) and years of relevant work experience (H = 1.057, df = 2, p> .05). There were significant differences for gender (H
Service Related Research Project

= 14.942, df = 1, p < .001) and year of training (H = 9.076, df = 2, p = .011). Females had a significantly higher mean rank than males. Year three had a significantly higher mean rank than year 1 (U = 1708, p = .002).

**State and Trait Anxiety**

Table 9. shows the state and trait anxiety median and standard deviations. Median are given, due to skewed scores.

<table>
<thead>
<tr>
<th></th>
<th>Median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Total</td>
<td>36</td>
<td>10.64</td>
</tr>
<tr>
<td>Trait Total</td>
<td>38</td>
<td>9.32</td>
</tr>
</tbody>
</table>

*Table 9.*

**State Anxiety**

Kruskal-Wallis revealed a significant difference for years of relevant work experience, (H = 8.776, df = 2, p = .012). Mann Whitney U showed that the significant difference was between 2 -3 years work experience and 3 years plus experience, (U = 2194.500, p = .045). 3 years work experience had a lower mean rank for state anxiety. There was no significant difference for age, (H = .458, df = 2, p > .05); gender, (H = 1.882, df = 1, p > .05); or year of training, (H = 2.835, df = 2, p > .05).

**Trait Anxiety**

There were significant differences for gender, (H = 4.847, df = 1, p = .028) and year of training, (H = 8.223, df = 2, p = .016). Females had a significantly higher mean rank on trait anxiety than males. Mann Whitney U revealed that the significant difference was between years 3 and 2, (U = 1497.00, p = .018). The mean rank of trait anxiety was significantly lower in year 3 than year 2. There were no significant difference for age, (H = .241, df = 2, p > .05); years of relevant work experience, (H = 2.499, df = 2, p > .05).
The relationship between self-efficacy and anxiety

Table 10. shows the correlations between scores for total self-efficacy, components and state and trait anxiety.

<table>
<thead>
<tr>
<th></th>
<th>State Anxiety</th>
<th>Trait Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy total</td>
<td>-.21*</td>
<td>-.40**</td>
</tr>
<tr>
<td>Core clinical</td>
<td>-.08</td>
<td>-.30**</td>
</tr>
<tr>
<td>psychology skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>-.23*</td>
<td>-.34**</td>
</tr>
<tr>
<td>Therapeutic skills</td>
<td>-.20*</td>
<td>-.39**</td>
</tr>
<tr>
<td>Dealing with difficult</td>
<td>-.13*</td>
<td>-.25**</td>
</tr>
<tr>
<td>client behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural competence</td>
<td>-.11</td>
<td>-.12</td>
</tr>
<tr>
<td>Awareness</td>
<td>.02</td>
<td>-.02</td>
</tr>
</tbody>
</table>

Table 10.
Significance * p< .05
**p< .001

State anxiety

There were significant negative correlations with state anxiety and total self-efficacy score (r = -.21, p< .001); process (r = -.23, p = .001); therapeutic skills (r = -.20, p =.003); and dealing with difficult client behaviour (r = -.13, p=.049).

There were no significant correlations with core clinical psychology skills (r = -.08, p> .05); cultural competence (r = -.113, p> .05); and awareness of values (r = -.020, p> .05).

Trait anxiety

There were significant negative correlations with trait anxiety and total self-efficacy scores (r = -.40, p<.001); core clinical psychology skills (r = -.30, p<.001); process (r =-.34, p< .001); therapeutic skills (r = -.39, p< .001); and dealing with difficult client behaviour (r = -.25, p< .001).

There were no significant correlations with cultural competence (r =-.12, p>.05) or awareness of values (r =-.02, p>.05).
**Discussion**

The response rate for this sample compares favourably with that of Kuyken et al. (2000, 60.7% for 1st and 2nd year trainees). Larson et al. (1992) had a 100% response rate, although it was a course requirement to complete the questionnaires.

PCA analyses revealed that the underlying structure of the self-efficacy questionnaire for trainee clinical psychologists is slightly different to the original questionnaire designed for trainee counselling psychologists (Larson et al. 1992). Both questionnaires had the components 2) process, 4) dealing with difficult client behaviour, 5) cultural competence and 6) awareness of values in common. Their differing components were 1) core clinical psychology skills and 3) therapeutic skills (largely microskills from Larson et al. 1992). Additional items that were included to make the self-efficacy questionnaire relevant to trainee clinical psychologists may have affected this. 5/9 items in component one (core clinical psychology skills) were additional items. Component 1 now seemed to focus on core skills of a clinical psychologist, such as formulation, knowledge of research methodology and the ability to integrate psychological theory and practice. Interestingly, this component now accounted for the majority of variance. With counselling psychologists, microskills (now therapeutic skills) accounted for the most variance, which Larson et al., (1992) described as core counselling skills. Other factors retained most of the items from Larson et al. (1992). The internal consistency of the questionnaire was not affected by the insertion of items relevant to trainee clinical psychologists. Of the additional items, use of psychometric assessment surprisingly had little contribution to ratings of self-efficacy, with the majority of trainees rating their abilities as high.

This study shows that self-efficacy ratings differ across years of clinical psychology training as well as counselling psychology. Ratings of self-efficacy were shown to increase across the three years of training, in particular between the 3rd and 2nd year trainees, providing support for hypothesis 1. This also supports the findings of Cheshire (2000), who found that although 2nd year trainees felt more confident than 1st year trainees, the 3rd year was when their confidence really developed. Gender had no effect in terms of overall self-efficacy, which supports the findings of (Larson et al., 1992).

Year of training was also an influential factor in component self-efficacy ratings. Again the third year was the time when there were significant increases in self-efficacy ratings. However, for core clinical psychology skills there was a significant increase in efficacy ratings between all three years. These may take less time to improve than therapeutic or
process skills, which may require longer clinical experience. Only confidence in dealing with
difficult client behaviour and cultural competence did not seem to increase significantly
throughout the years of training. Cultural competence ratings hardly changed across the years
of training, with trainees rating themselves as fairly efficacious throughout clinical training.
Gender was also a factor. Males rated themselves as more efficacious in core skills.
However, females rated themselves as more self-efficacious with awareness of values.

The influence of demographic variables upon state anxiety revealed that year of training had
no significant effect. However, this may have been affected by 3rd years being anxious at the
time of completing the questionnaires, as they were about to hand in their theses. Trait
anxiety, was significantly lower in the third year of training.

Trainees with more years of relevant work experience prior to clinical training seemed to
exhibit less state anxiety. This contradicts the findings of Cheshire (2000), who found that
that previous experience had little to do with anxiety. Whether she included state anxiety or
solely focused on trait anxiety is uncertain. Gender was an important factor in trait anxiety,
with females exhibiting significantly more than males.

Self-efficacy was also examined in relation to state and trait anxiety. A negative relationship
was found with both. This replicates the findings of Larson et al. (1992), but with trainee
clinical psychologists. Higher ratings for process, therapeutic skills and dealing with difficult
client behaviour were also associated with low trait and state anxiety. Only trait anxiety
varied significantly with core clinical skills, suggesting that perhaps developing confidence in
core clinical psychology skills such as research and formulation is linked with personality
characteristics of trainees. This may add support to Kuyken et al. (2000), who found that
trainees who had problems coping with demands of clinical training continued to do so
throughout the course of training. Cultural competence and awareness of values seem to have
little relationship with anxiety.

Limitations of study
Due to the cross-sectional design, factors can only be considered as associations. Trainees
were not followed across the three years of training. A longitudinal study would have been
better, but was not possible due to time constraints. Design of the self-efficacy questionnaire
itself could also be improved. Many items contain two elements, which is not desirable for
questionnaire design. This may mean that people may agree to one item but not the other.
However, this was based on the questionnaire by Larson et al. (1992), which already had
good reliability and convergent validity. Important areas are also neglected in the questionnaire. For example, the questionnaire does not include working with care staff or families. In addition, whilst there was a good response rate, there may be a systematic bias in the sample, with more self-efficacious trainees responding.

**Implications for training**

The findings suggest that self-efficacy does appear to increase throughout clinical psychology training. Self-efficacy theory (Bandura, 1977) applied to clinical psychology trainees, implies that trainees with higher self-efficacy are more likely to approach, expend more effort and persist in clinical psychology behaviours. This is important in light of the research by Kuyken et al. (2000). Trainees who are more self-efficacious are more likely to be able to be able to draw from personal and professional resources in the face of demands of clinical training. This is important with the high levels of depression and anxiety reported by Kuyken et al. (2000) amongst some trainees. Self-efficacious trainees are also more likely to commit to their career and develop professional identification (Bucher & Stelling, 1977), which is important for the future growth of clinical psychology in the National Health Service.

**Future directions**

Further research needs to ascertain in greater detail, which particular aspects of course or placement experience facilitate self-efficacy. Cheshire (2000a) found that both insufficiently clear connections between theory and practice in supervision, as well as inadequate feedback about their own interventions, left trainees confused. The experience of success and failure is very important in the development of self-efficacy (Bandura, 1997). Failure can be much more detrimental to self-efficacy than any benefits of success (Bandura, 1977). How trainees experience success and failure is an important direction for further research.

**Feedback to service**

Findings of the research project were fed back to trainees via course directors in the form of a letter (see appendix 11 for responses from course directors). Additionally, the research was presented orally to first and second year trainees at the author’s university.
References


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Appendix 1

* = items changed from original questionnaire, which were thought to have a psychodynamic slant (text in italics is original wording of item.

(CP) = items changed to be more relevant to trainee clinical psychologists (text underlined is original wording of items).

N = new items inserted relevant to clinical psychology training

The rating for each item was:

- strongly disagree 1 2 3 4 5 6 strongly agree

1. When using responses like reflection of feeling, active listening, clarification, probing, I am confident I will be concise and to the point.

2. When I initiate the end of a session I am positive it will not be in a manner that is not abrupt nor brusque and that I will end the session on time.

3. I feel confident that I can draw upon a broad theoretical and research knowledge base and apply this appropriately to my clinical practice. (N)

4. I am likely to impose my values on the client during the therapeutic process.

5. I am confident that I will respond appropriately to the client in view of what the client will express (e.g. my questions will be meaningful and not concerned with trivia and minutia).

6. I am certain that both my formulation and suggestions for intervention will be concise and to the point. *

   I am certain that my interpretation and confrontation responses will be concise and to the point.

7. I am worried that the wording of my responses - like reflection of feeling, clarification and probing may be confusing and hard to understand.

8. I feel that I may not be able to respond to the client in a non-judgemental way with respect to the client’s values, beliefs, etc.

9. I am worried that the type of responses I use at a particular time, i.e. reflection of feeling, interpretation, etc., may not be the appropriate response.

10. I feel I will respond to the client in an appropriate length of time (neither interrupting the client nor waiting too long to respond).

11. I believe I have a good understanding of research theory and methodology and feel able to apply it in evaluating and developing clinical practice. (N)

12. I am sure that the content of my responses, i.e. reflection of meaning, clarification, and probing will be an accurate reflection of what the client is saying.

13. I feel confident that I will appear competent and earn the respect of my client.
14. I am confident that both my formulation and suggestions for intervention will be effective. *
   *I am confident that my interpretation and confrontation responses will be effective in that they will be validated by the client's immediate response.

15. I feel confident that I have resolved conflicts in my personal life so that they will not interfere with my therapist abilities.

16. I feel that the content of both my formulation and suggestions for intervention will be an accurate reflection of what the client is saying. *
   *I feel that the content of my interpretation and confrontation responses will be consistent with and not discrepant from what the client is saying.

17. I feel that I have enough fundamental knowledge to do effective therapy.
   *I feel that I have enough fundamental knowledge to do effective counseling.

18. I may not be able to maintain the intensity and energy level needed to produce client confidence and active participation.

19. I do not feel confident that I can integrate psychological theory, research and practice. (N)

20. I am confident that the wording of both my formulation of the client's situation and suggestions for intervention will be clear and easy for the client to understand. *
   *I am confident that the wording of my interpretation and confrontation responses will be clear and easy to understand.

21. I feel able to psychologically formulate clinical cases. (N)

22. I am not sure that in a therapeutic relationship I will express myself in a way that is natural without deliberating over every response or action.
   *I am not sure that in a counseling relationship I will express myself in a way that is natural without deliberating over every response or action.

23. I am afraid that I may not understand and properly determine meanings of the client's non-verbal behaviours.

24. I am confident that I will know when to use open or close ended probes, and that these probes will reflect the concerns of the client and not be trivial.

25. My assessment of clients' problems may not be as accurate as I would like them to be.

26. I am uncertain as to whether I will be able to appropriately intervene with and challenge my client in therapy. *
   *I am uncertain as to whether I will be able to appropriately confront and challenge my client in therapy.

27. When giving responses, i.e. reflection of feeling, active listening, clarification, probing, I'm afraid that they won't be effective in that they won't be validated by the client's immediate response.

28. I believe that I am competent in my choice and administration of psychometric assessment. (N)
29. I do not feel I possess a large enough repertoire of techniques to deal with the different problems my client may present.

30. I feel confident regarding my abilities to deal with crisis situations which may arise during the therapy sessions - e.g. suicide, alcoholism, abuse, etc.

31. I am uncomfortable dealing with clients who appear unmotivated to work towards mutually determined goals.

32. I may have difficulty with clients who do not verbalise their thoughts during the therapy session.

33. I am unsure as how to deal with clients who appear noncommittal and indecisive.

34. When working with ethnic minority clients I am confident that I will be able to bridge cultural differences in the therapeutic process. When working with ethnic minority clients I am confident that I will be able to bridge cultural differences in the counseling process.

35. I feel I will be an effective psychologist with clients of a different social class. I feel I will be an effective counselor with clients of a different social class.

36. I am worried that both my formulation and suggestions for intervention may not over time assist the client to be more specific in defining and clarifying the problem. I am worried that my interpretation and confrontation responses may not over time assist the client to be more specific in defining and clarifying the problem.

37. I feel confident that I will be able to conceptualise my clients' problems.

38. I am unsure as to how I will lead my client towards the development and selection of concrete goals to work toward.

39. I am confident that I can assess my client’s readiness and commitment to change.

40. I feel I may give advice.

41. In working with culturally different clients I may have a difficult time viewing situations from their perspective.

42. I am afraid that I may not be able to relate to someone of lower socio-economic status than me.

43. I feel that I am able to draw on my general psychological knowledge when working with clients and populations with different needs. (N)
SELF-EVALUATION QUESTIONNAIRE

Appendix 2

Developed by Charles D. Spielberger

R.L. Gorsuch, R. Lushene, P.R. Vagg, and G.A. Jacobs

STAI Form Y-1

Name: ________________________________ Date: ____________________ S _____

Age: ________________ Sex: M _____ F _____ T _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

1. I feel calm ........................................... 1 2 3 4
2. I feel secure ........................................... 1 2 3 4
3. I am tense ........................................... 1 2 3 4
4. I feel strained ........................................... 1 2 3 4
5. I feel at ease ........................................... 1 2 3 4
6. I feel upset ........................................... 1 2 3 4
7. I am presently worrying over possible misfortunes ........................................... 1 2 3 4
8. I feel satisfied ........................................... 1 2 3 4
9. I feel frightened ........................................... 1 2 3 4
10. I feel comfortable ........................................... 1 2 3 4
11. I feel self-confident ........................................... 1 2 3 4
12. I feel nervous ........................................... 1 2 3 4
13. I am jittery ........................................... 1 2 3 4
14. I feel indecisive ........................................... 1 2 3 4
15. I am relaxed ........................................... 1 2 3 4
16. I feel content ........................................... 1 2 3 4
17. I am worried ........................................... 1 2 3 4
18. I feel confused ........................................... 1 2 3 4
19. I feel steady ........................................... 1 2 3 4
20. I feel pleasant ........................................... 1 2 3 4

The development of the State-Trait Anxiety Inventory was supported by grants from the National Institute of Mental Health (Grant MH-15443) and the National Science Foundation (Grant GS-7960). MIND GARDEN, Inc., developed the easy-to-read construction for this test.

PO Box 60699, Palo Alto, CA 94306, United States of America

Published by Consulting Psychologists Press, Inc.
SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Service Related Research Project

Name: ___________________________ Date: __________________

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

21. I feel pleasant ................................................................. 1 2 3 4
22. I feel nervous and restless .................................................. 1 2 3 4
23. I feel satisfied with myself .................................................. 1 2 3 4
24. I wish I could be as happy as others seem to be ................ 1 2 3 4
25. I feel like a failure ............................................................. 1 2 3 4
26. I feel rested ........................................................................ 1 2 3 4
27. I am “calm, cool, and collected” ....................................... 1 2 3 4
28. I feel that difficulties are piling up so that I cannot overcome them ................................................................. 1 2 3 4
29. I worry too much over something that really doesn’t matter ................................................................. 1 2 3 4
30. I am happy ......................................................................... 1 2 3 4
31. I have disturbing thoughts .................................................. 1 2 3 4
32. I lack self-confidence .......................................................... 1 2 3 4
33. I feel secure ..................................................................... 1 2 3 4
34. I make decisions easily ....................................................... 1 2 3 4
35. I feel inadequate ............................................................... 1 2 3 4
36. I am content ..................................................................... 1 2 3 4
37. Some unimportant thought runs through my mind and bothers me ................................................................. 1 2 3 4
38. I take disappointments so keenly that I can’t put them out of my mind ................................................................. 1 2 3 4
39. I am a steady person ........................................................... 1 2 3 4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests 1 2 3 4

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Service Related Research Project

Please could you complete the following details

Appendix 3

1. Age
   □ Under 25
   □ 25-30
   □ 31-35
   □ 36-40
   □ 41 plus

2. Gender
   □ Male
   □ Female

3. Year of training
   □ 1st
   □ 2nd
   □ 3rd

4. Relevant work experience before clinical psychology training
   □ Assistant psychologist
   □ Research assistant
   □ Clinical / Research post
   □ Nursing assistant
   □ Other (please specify) ......................................................

5. Years of relevant work experience (see question 4.) before clinical psychology training
   □ 0-1 year
   □ 1-2 years
   □ 2-3 years
   □ 5 years plus

6. Academic qualifications (other than psychology undergraduate degree)
   □ Conversion degree
   □ Masters
   □ PhD
   □ Other (please specify) ......................................................

7. Placements experienced on training
   □ Adult Mental Health
   □ Learning Disabilities
   □ Child
   □ Older Adult
   □ Specialist placement (please specify) ..................................

8. Preferred theoretical orientation
   □ Cognitive behavioural
   □ Systemic
   □ Psychodynamic
   □ Other (please specify) ......................................................
Dear [Name],

The development of self-efficacy amongst trainee clinical psychologists (ACE/2001/28/Psych)

I am writing to inform you that the Advisory Committee on Ethics has considered the above protocol (and the subsequent information supplied) and has approved it on the understanding that the Ethical Guidelines for Teaching and Research are observed. For your information, and future reference, these Guidelines can be downloaded from the Committee’s website at http://www.surrey.ac.uk/Surrey/ACE/.

This letter of approval relates only to the study specified in your research protocol (ACE/2001/28/Psych). The Committee should be notified of any changes to the proposal, any adverse reactions, and if the study is terminated earlier than expected, with reasons.

Date of approval by the Advisory Committee on Ethics: 24 May 2001
Date of expiry of approval by the Advisory Committee on Ethics: 23 May 2006

Please inform me when the research has been completed.

Yours sincerely

Catherine Ashbee (Mrs)
Secretary, University Advisory Committee on Ethics

cc: Professor L J King, Chairman, ACE
    Dr L Dowdney, Supervisor, Dept of Psychology
Dear...........

Service related research project: The development of self-efficacy amongst trainee clinical psychologists

I am a trainee clinical psychologist writing to ask for your assistance in furthering my service related research project. My project aims to assess trainees' sense of self-efficacy (or perceived ability) in relation to their clinical work, and how this develops over the course of their clinical training. Self-efficacy is believed to be important in predicting performance, professional identification and commitment to a career.

I plan to survey the Thames and South Eastern Region clinical psychology courses in order to obtain sufficient numbers for the study. I would like to approach trainees on your course in order to seek their participation in my project and would be extremely grateful for your permission to do so. I intend to measure self-efficacy by distributing a self-estimate questionnaire adapted from one used previously with counselling psychology trainees. This instrument assesses what trainees perceive their self-efficacy to be and what factors promote and/or inhibit their self-efficacy. I also intend to use the State-Trait Anxiety Inventory (STAI) to measure anxiety, which is believed to be associated with the development of self-efficacy. A short demographic questionnaire would also suggest other important variables linked with self-efficacy. These questionnaires would be anonymous and completely confidential. No coding system would be used and questionnaires could be returned to me by sae. There would, therefore, be no way of identifying either individual trainees or the Course on which they are training.

I would be extremely grateful if you would give me permission to send the questionnaires out by post to you for distribution. It would also be very helpful if you could let me know who would be the person to contact about distribution of the questionnaires.

It is a requirement of our training that we feed back to those services who participate in our service related research projects. I would anticipate sharing the results of this study with you to feedback to the course as a whole. I hope that the results of this research will help to contribute to clinical psychology training in the future. Please would you indicate on the attached form whether I may approach your trainees to invite their participation in this project. A sae is attached, alternatively you can e-mail me at: .............
Dear Trainee,

Service related research project: The development of self-efficacy amongst trainee clinical psychologists

I am a trainee clinical psychologist at the University of Surrey carrying out my service related research project. My project aims to investigate trainees’ sense of self-efficacy (or perceived ability) in relation to clinical skills and how this develops over the course of clinical training. I am also looking at how anxiety is related to this. I would be extremely grateful if you could find some time in your busy schedule to fill in these three short questionnaires attached, which should take only 15 minutes to complete.

The questionnaires are completely anonymous and confidential, both on an individual basis and as to which course you are on. My only aim is to look at trainees as a whole across the Thames and South Eastern courses, using one-off questionnaires across all three year groups. I hope that my findings on how trainees develop confidence in carrying out their clinical work will be useful information for the courses and help contribute to good training for future trainees and ourselves.

Once you have completed the questionnaires, please could you return it in the sae attached.

Thank you for helping with my research.

Yours faithfully,

Trainee Clinical Psychologist
University of Surrey

Supervised by:
Dr Linda Dowdney
Clinical Psychology Course Director
University of Surrey
Dear Trainee,

Service related research project: The development of self-efficacy amongst trainee clinical psychologists

Last week I sent three questionnaires to you looking at perceived self-efficacy, anxiety and demographic information amongst trainee clinical psychologists. These questionnaires were sent to all trainees in the Thames and South-Eastern Region.

If you have already completed them and returned them to me, thank you very much. If not, please could you do so today. It is extremely important that I am able to get a large enough sample to make the research representative of trainees.

If by some chance you did not receive the questionnaires, or they got misplaced, please contact me right now at ................. and I will get them in the post to you today.

Yours faithfully,

Trainee Clinical Psychologist
University of Surrey
Table I. shows the skewness and kurtosis for total self-efficacy and state and trait anxiety.

<table>
<thead>
<tr>
<th></th>
<th>Total self-efficacy</th>
<th>State anxiety</th>
<th>Trait anxiety</th>
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<td>0.61</td>
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<tr>
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<td>0.16</td>
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<tr>
<td>Z score</td>
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<td>3.81*</td>
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<td>Kurtosis</td>
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<td>0.24</td>
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<td>Std. Error of Kurtosis</td>
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<tr>
<td>Z score</td>
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</table>

* = significant skewness ($Z = \geq 3.29$).
Table II. shows the items in the 5 components of Larson et al. (1992).

<table>
<thead>
<tr>
<th>1) Microskills</th>
<th>2) Process</th>
<th>3) Dealing with difficult client behaviour</th>
<th>4) Cultural competence</th>
<th>5) Awareness of values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When using responses like feeling, active listening, clarification, probing, I am confident I will be concise and to the point.</td>
<td>7. I am worried that the wording of my responses – like reflection of feeling, clarification and probing may be confusing and hard to understand.</td>
<td>17. I feel that I have enough fundamental knowledge to do effective therapy.</td>
<td>34. When working with ethnic minority clients I am confident that I will be able to bridge cultural differences in the therapeutic process.</td>
<td>4. I am likely to impose my values on the client during the therapeutic process.</td>
</tr>
<tr>
<td>2. When I initiate the end of a session I am positive it will not be in a manner that is abrupt or brusque and that I will end the session on time.</td>
<td>9. I am worried that the type of response that I use at a particular time, i.e. reflection of feeling, interpretation, etc., may not be the appropriate response.</td>
<td>24. I am confident that I will know when to use open or close ended probes, and that these probes will reflect the concerns of the client and not be trivial.</td>
<td>35. I feel I will be an effective psychologist with clients of a different social class.</td>
<td>8. I feel that I may not be able to respond to the client in a non-judgemental way with respect to the clients' values, beliefs, etc.</td>
</tr>
<tr>
<td>5. I am confident that I will respond appropriately to the client in view of what the client will express (my questions will be meaningful and not concerned with trivia and minutia).</td>
<td>18. I may not be able to maintain the intensity and energy level needed to produce client confidence and active participation.</td>
<td>29. I do not feel I possess a large enough repertoire of techniques to deal with different problems my client may present.</td>
<td>41. In working with culturally different clients I may have a difficult time viewing situations from their perspective.</td>
<td>15. I feel confident that I have resolved conflicts in my personal life so that they will not interfere with my therapist abilities.</td>
</tr>
<tr>
<td>10. I feel I will respond to the client in an appropriate length of time (neither interrupting the client nor waiting too long to respond).</td>
<td>22. I am not sure that in a therapeutic relationship I will express myself in a way that is natural without deliberating over every response or action.</td>
<td>30. I feel confident regarding my ability to deal with crisis situations which may arise during therapy sessions – e.g. suicide, alcoholism, abuse, etc.</td>
<td>42. I am afraid that I may not be able to relate to someone of lower socio-economic status than me.</td>
<td>40. I feel that I may give advice.</td>
</tr>
<tr>
<td>12. I am sure that the content of my responses, i.e. reflection of meaning, clarification, and probing will be an accurate reflection of what the client is saying.</td>
<td>23. I am afraid that I may not understand and properly determine meanings of the client's non-verbal behaviours.</td>
<td>31. I am uncomfortable dealing with clients who appear unmotivated to work towards mutually determined goals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I feel confident that I will appear competent and earn the respect of my client.</td>
<td>25. My assessment of client's problems may not be as accurate as I would like them to be.</td>
<td>32. I may have difficulty with clients who do not verbalize their thoughts during the therapy session.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1) Microskills | 2) Process | 3) Dealing with difficult client behaviour | 4) Cultural competence | 5) Awareness of values
---|---|---|---|---
16. I feel that the content of both my formulation and suggestions for intervention will be an accurate reflection of what the client is saying. | 26. I am uncertain as to whether I will be able to appropriately intervene and challenge my client in therapy. | 33. I am unsure as how to deal with clients who appear noncommittal and indecisive. |  |  |
20. I am confident that the wording of both my formulation of the client’s situation and suggestions for intervention will be clear and easy for the client to understand. | 27. When giving responses, i.e. reflection of feeling, active listening, clarification, probing, I’m afraid that they won’t be effective in that they won’t be validated by the client’s immediate response. |  |  |  |
37. I feel confident that I will be able to conceptualize my client’s problems. | 36. I am worried that both my formulation and suggestions for intervention may not over time assist the client to be more specific in defining and clarifying the problem. |  |  |  |
39. I am confident that I can assess my client’s readiness and commitment for change. | 38. I am unsure as to how I will lead my client towards the development and selection of concrete goals to work towards. |  |  |  |

Table II.
Appendix 10

Table III to X show the mean ranks for age, gender, year of training and years of relevant work experience prior to clinical psychology training. These ranks are compared for the 6 components identified, total self-efficacy scores and state and trait anxiety.

**Component and self-efficacy total mean ranks**

<table>
<thead>
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<th>Component</th>
<th>Age</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Core clinical skills</td>
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<td>187</td>
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<tr>
<td></td>
<td>30 plus</td>
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<tr>
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</tr>
<tr>
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<td>30 plus</td>
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</tr>
<tr>
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<td>111.32</td>
</tr>
<tr>
<td></td>
<td>30 plus</td>
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<td>121.26</td>
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<tr>
<td>5) Cultural competence</td>
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</tr>
<tr>
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<td>111</td>
</tr>
<tr>
<td>6) Awareness of values</td>
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</tr>
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<tr>
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Table III.

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<tr>
<td></td>
<td>female</td>
<td>181</td>
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Table VI.

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Table VIII.

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Table IX.

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<tr>
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<td>103.60</td>
</tr>
</tbody>
</table>

Table X.
Service Related Research Project

Appendix 11

Service related research project: The development of self-efficacy amongst trainee clinical psychologists.

Thank you for the feedback. I found the findings very interesting and it would be good to publish these findings.

Regards,

Tony Lavender
Director

---

MSN - More Useful Everyday

Home | My MSN | Hotmail | Search | Shopping | Money | People & Chat | Cars

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Dear Richard, many thanks for feedback on interesting project. Wonder if I.Q—measured by a high level test such as AH5—would show any relationship with component 1. Best Wishes, Yours, David Hemsley.
Qualitative Research Project

An exploration of second year trainee clinical psychologists' experiences of their dual status as clinicians and post-graduate students, with a focus on potentially conflicting aspects.

Year 2

May 2002
Introduction

Previous research has identified that trainees experience clinical psychology training as "challenging in ways that they had not anticipated" (Cheshire, 2001), requiring trainees to become competent in areas of academic, research and clinical work. Cheshire (2000) conducted semi-structured interviews with 39 trainee clinical psychologists across three years of a clinical psychology training programme. Thematic analysis revealed that trainees felt emotionally and intellectually drained by the demands of the clinical role in their early placements, feeling that they had little to offer. Even trainees with previous experience reported being unprepared for the demands of the clinical work, especially the increased responsibility, increased complexity of cases and increased expectations of themselves.

Conflict was reported to arise from the different roles that they held, particularly their dual status as NHS employees and university postgraduates. Trainees identified much more with the employee role than the student role, but were required to switch between the two. Competing student and clinician roles often led to trainees feeling that they were letting patients and colleagues down by having to focus their attention on coursework, particularly their thesis. More importance was attached to the clinician role and this resulted in minimum effort being put into coursework apart from case studies, which were considered to help in developing their clinical skills.

Kuyken et al. (1998) in a study of 183 trainees using multiple scales, found that at least 25% of trainees reported significant self-esteem problems, problems adjusting at work and depression and anxiety. Kuyken et al. (2000) followed up the previous study with 167 trainees using the Employee Assistance Program Inventory (EAPI). They reported that levels of psychological distress significantly increased between year one and year two. Therefore, the second year seems a particularly important time to study trainees.

So far little research has focused on trainee clinical psychologists’ experiences of clinical training, in particular their multiple academic, research and clinical roles and how they interact. Although Cheshire (2000) has described part of the process, there is little theory used to explain the experiences of trainees and how they cope with different the different demands of their competing roles. This research aimed to address this gap in the literature, by developing a theory of the trainee’s experience using a grounded theory approach.
Method

Participants
Five second year trainee clinical psychologists were invited to be interviewed. Participants were chosen to cover a range of experiences, such as their ages and background experience before clinical psychology training. “Theoretical sampling” was used where participants were invited consecutively after analysing the transcript of previous participants, to identify gaps in the sample group (Glaser & Strauss, 1967: cited in Pidgeon, 1996). All agreed to participate. The demographic profile is provided in Appendix 3.

Researchers
The study was conducted by a group of researchers who were also second year trainee clinical psychologists. The theoretical orientation was mainly integrative, favouring cognitive-behavioural, psychodynamic and systemic approaches. One researcher had conducted previous research into the development of self-efficacy amongst trainee clinical psychologists.

Interviewing
An interview schedule was developed. This involved the researchers generating a list of appropriate areas of experience that they were interested in. This was based on their personal experience as trainees and from knowledge of the trainee literature. Questions were developed to elicit the experience of the trainee clinical psychologist in these various areas (see Appendix 1 for interview schedule). Advice was sought from an expert in qualitative research methods and incorporated into the interview schedule. Interviews were carried out at the trainees’ university and lasted twenty to thirty minutes. Two pilot interviews were initially conducted to verify the appropriateness of the questions. The pilot interviews led to minor clarification of the first question (see Appendix 1). The five interviews were divided amongst the five researchers. Interviews were taped and then transcribed (see Appendix 4 for sample interview). The interview began with a “grand tour” question (Spradley, 1979: cited in McVey, Madill, & Fielding, 2001), which was designed to be open-ended to allow interviewees to lead the conversation (see Appendix 1).

Analytic procedure
The interviews were analysed using grounded theory (Glaser & Strauss, 1967: cited in Pidgeon, 1996). Transcripts were analysed and units of meaning were identified (words describing the same phenomena). “Constant comparison” (continually sifting and comparing elements) was used to refine categories. Similar categories were clustered together. Links were identified between the different categories identified.
Results
The data produced seven categories which conceptualised trainees' experiences. These categories were structured around the experience of conflict experienced by trainee clinical psychologists, due to their dual status as clinicians and students (Figure 1). This was in line with Glaser and Strauss (1967: cited in McVey et al., 2001) who recommend doing justice to one central phenomenon. Category definitions can be found in Appendix 5.

The model shows an interactive relationship of categories. These were: previous experience; definitions and experience of the role of the trainee clinical psychologist; managing the roles; imposed structure; coping strategies; conflict; and future expectations.
Figure 1. Theory of role conflict in trainee clinical psychologists:
Previous experience

Trainees’ work experience prior to clinical psychology training appeared to have a large impact initially on how they defined and experienced the roles of a trainee clinical psychologist.

I suppose for me the clinician role is like working, so that’s actually much easier...um...and isn’t so different to what I was doing before I started the course. (A, lines 39-40)

However, even trainees with considerable previous experience and responsibility seemed considerably anxious about their competence when they started the course, moving to a role which they were unfamiliar with, which is a similar finding to Cheshire (2000).

I had a resource officers post before that [first placement], so I had a lot of responsibility...I think that created some anxiety moving from a role where I knew what I was doing to a role where I didn’t know what I was doing. (E, lines 59-65)

Managing the roles

Some trainees were able to identify that they had developed throughout the course so far. This included learning to identify with roles that they had not been used to before. However, increased identity with the clinical role did not always mean that the trainee felt comfortable with this role, due to the responsibility accompanying this role.

A big difference... I suppose one difference...there’s part of the identity of the professional or clinician, which I didn’t have before. People are coming to you. You help them sort out some of their difficulties. In some cases, people are looking at you for expert advice. That’s something I find quite uncomfortable. (C, lines 126-130).

Becoming aware of the requirements for the course, knowing what are the expectations of the trainee in the different roles also seemed associated with a lessening of anxiety.

I know what the course wants in terms of an essay, I know what they want in terms of a case report, you know I’ve failed things, so I know what that’s like now. (A, 125-127).

Less ambiguity of the role appeared to develop throughout training, being associated with less anxiety and conflict. This is similar to role ambiguity theory, described in the conflict section (McCormick & Ilgen, 1987).
Imposed structure
Some of the conflict experienced was interpreted as arising from the imposed structure of the course, having both university and placement days, creating an imposed separation of the roles.

I think it can be quite odd, particularly being a practitioner half of the week, when you're a student the other half...You're continually switching from being the person who doesn't know anything and having to be given a lot of information, and then spending the other half of the week as if you do know what you are talking about and as though you're fit to deliver some kind of care to people. (D, lines 35-40).

Conflict
This category refers to the conflict trainees reported experiencing as a consequence of their different roles. Conflict appeared to result from three main sources. Firstly, a lack of identity with the student role. Trainees felt frustrated and disempowered by the constraints of the student role compared to their clinical role. They reported feeling “patronised” and as though at times they “were not being taught anything” and so the student role was “a waste of time.”

The second source of conflict was the trainees’ perception of a discrepancy between the level of competence expected of them in the student versus the clinician roles. They felt that in their role as a clinician they were expected to have a higher level of competence than they actually had, whilst as students they were treated as though they were incompetent.

The third source of conflict appeared to be competing pressures from the different environmental settings in which trainees perform the student and clinician role. Swapping between the different atmospheres in the different environmental settings created conflict between the trainees’ identities with each role. Such conflict was expressed in feelings of guilt about unequal dictation of time between the roles, feelings of rebellion towards the student role or feeling as though they were being deceitful in their portrayal of themselves as clinicians.

Conflict was interpreted as developing between the ambiguous nature of the student and clinician role. Trainees felt more comfortable with a position of not knowing in the student role than in the clinician role, because of client responsibility, needing to know how to help them.
It’s quite ambiguous, because as a clinician you’re supposed to know things and as a student you are not necessarily supposed to. I think in terms of putting across a professional persona at work, that’s quite difficult sometimes. I don’t want to claim knowledge that I don’t have, and yet I don’t want to claim no knowledge as I don’t think clients wouldn’t like that. I think clients want to see someone who has some idea of what they’re doing and can be useful. You can go into supervision and say I don’t know anything about this, but you can’t go to your client and say I don’t know what to do, can you come back next week. (E, lines 29-37).

Conflict was also interpreted to arise due to the desire to appear competent, especially being evaluated by supervisors on clinical placements, feeling the need to appear competent, but at the same time acknowledging any knowledge gaps.

...being evaluated is quite difficult in supervision, because it comes up with wanting to present yourself as someone who knows some things, but sometimes you want to say I don’t know anything about this, I’m completely lost. But then I start to think they’re [supervisor] going to fail me. So there’s pressure to be quite competent, but at the same time pressure to be very honest about the things your not quite so good at. (E, lines 47-52).

The role conflict described in this study is similar to that described in organisational psychology, which occurs when the behaviours for different conditions are contradictory, in this case not knowing in the student role and knowing in the clinician role (McCormick & Ilgen, 1987). The interpretation of role ambiguity in this study is implicated in poor role performance in organisational psychology and often leads to stress, when the person realises that they are supposed to do something and do it well, but does not know what that something is (McCormick & Ilgen, 1987).

Conflict also appeared to arise, if the trainee’s experience of the different roles was not in line with their previous experience, how they defined the role of the clinical psychologist, or what job role they saw themselves fulfilling after qualifying. In particular, the research role seemed to cause conflict for some trainees. This was the case for research where trainees could not see links to clinical work.

I don’t mind so much the academic and clinical bit because they ah seem to apply quite well to each other. The research bit....I could probably ....do without....it almost feels like the whole purpose of being here, which is to treat people just gets completely lost. (B, lines 23-28).

I see the research as being part of the doctorate. Once it’s done and dusted that’s it. (D, lines 30-31).
However, it seemed that perceiving your future role as involving different aspects, especially research and not just clinical work was associated with less conflict with the present variety of roles in clinical training.

I like the fact that there are different aspects to it [clinical training]. I see myself trying to continue this so that in future I’d see myself as having a part university job and a part clinical job. (C, lines 25-27).

Like Cheshire (2000) the student role also appeared to lead to conflict with the clinician role at times, when pressure of coursework meant that clinical work had to suffer.

Sometimes there can be a clash between the different roles....I suppose the classic example would be if I’m deciding whether I’m going to be doing some preparation for clients, or I’ve got a piece of coursework to hand in....I’d think okay ...I think I’m going to rely a bit more on my supervisor this week,....because I’ve got to focus on the coursework. So sometimes that can be a bit uncomfortable. (C, lines 35-42).

Coping strategies
Some trainees seemed able to reflect that the ambiguity they experienced was not just part of clinical training, but part of the role of a clinical psychologist, which appeared to ease the anxiety experienced. Validation for these feelings seemed to come from contact with other professionals, who still experienced ambiguity. Therefore, we interpreted the use of others as social comparison or support as a coping strategy. This seemed associated with a decrease in conflict related to the ambiguous nature of the roles.

....I see them [family therapy team] in therapy struggling with the same sorts of issues and missing the same sorts of points and wandering around in the same incoherent way, the same thing that I do. It’s really nice, because I thought I was so many miles away from what other people were doing. I think it’s also realising that I’m probably going to feel the same kind of way when I qualify. There are so many more experiences that I’m going to want to get, so in a sense I’m going to have this ambiguity forever. So rather than attributing it to being a trainee, I attribute it to the job to being about what psychology is. (E, lines 73-81).

Ambiguity in clinical training is recognised as causing considerable anxiety, being unsure what to do in potentially difficult clinical situations (Pica, 1998). The validation of these feelings of uncertainty has been considered important in decreasing the associated anxiety and stress (Pica, 1998; Nelson, Dell’Oliver, Koch, & Buckler, 2001).
Validation for feelings of anxiety was also interpreted to be sought through social support from other trainees.

...there's very much a shared anxiety or shared opportunity to whinge about the same kind of things, which is actually quite helpful, so you don't feel isolated, and you know, "Am I the only one that's feeling these kind of things?" (A, lines 121-127).

Other strategies interpreted by the researchers as coping strategies included viewing the different roles as distinct and switching from one role to the other, like changing hats.

it's like one day I'll wear the major research one [hat] and then the next day I'll wear the academic hat. B, lines 137-138).

Some trainees described linking the different roles together mentally to form a cohesive framework for all the different roles.

I suppose what joins them all together for me, is that it's always about learning. Okay sometimes it's more about the research and sometimes more in clinical practice, but they seem quite strongly interrelated and it's all about increasing self-awareness....learning more about the theories, learning about putting them into practice and being more reflective and empathetic... (C, lines 18-23).

For others, although they could conceptualise this, for the purpose of achieving the course requirements, it was actually easier to keep the tasks separate.

...in your mind you can see how the three sort of interlink and and interchange, but when it comes to the work you have to do on the course, I think you've got to be quite boundaried. (B, lines 102-104)

Due to the time-limited nature of the research, respondent validation was not attempted. Equally category credibility was restricted to the researchers' perspectives.
Discussion

This study has suggested an explanation of trainee clinical psychologists’ experiences of their roles as clinicians and students. The use of a grounded theory approach allowed the development of a theory to help explain these experiences. The model offers an explanation for why conflict arises between the roles of student and clinician in trainees. This model has similar aspects to a cognitive behavioural model (Beck & Emery, 1983: cited in Hawton, Salkovskis, Kirk, & Clark, 1989), where past experience is influential in the formation of general beliefs and the thoughts, feelings and behaviour in specific situations. The similarity of the model to cognitive behavioural models may reflect the influence of this model in teaching at the researchers’ university.

Both the interview schedule and the analysis using grounded theory were adequate at capturing trainees’ experiences of their dual role as clinicians and students and were able to identify conflicting aspects. The interview schedule could be criticised for its structure and use of prompts, leading interviewees in a certain direction. However, questions were designed to be open-ended (Pidgeon, 1996) so as not to be constraining and use of prompts was kept to the bare minimum and was based on the interviewees responses. Due to the small nature of the research the links are only tentative. Ideally, the interview would have been longer and more participants included. The use of “grounded theory” led to theory development, which was the purpose of the study, due to a lack of theory explaining role conflict with trainee clinical psychologists. The theory is not fully able to explain the relationship between the different categories, but has provided useful information for further investigation.

Limitations

The research was based solely on the experience of five trainees, all at the same university, due to the time constraints of analysing the data. Although the researchers deliberately tried to identify participants’ accounts that were lacking from the collected data, more trainees with an academic / research background could have been included. Only second year trainees were interviewed cross-sectionally. Ideally trainees would be followed longitudinally throughout the course, but again this was not possible, due to the small nature of the research. Interviewing people with experience at research may have meant that they were more motivated to give the researcher material that they thought would be helpful.

The influence of the researchers on the participants and the interpretation of the data is important to acknowledge. The researchers were also second year trainee clinical
psychologists and had their own views, based on their experiences of clinical training, which will have influenced the data interpretation to some extent.

Implications for training
Validation of feelings of conflict and ambiguity is important, particularly the use of support from other trainees from all stages of training. This may include the availability of trainee groups to reflect together on the training experience. Validation of feelings of ambiguity even from qualified psychologists teaching on courses is also a powerful source of anxiety reduction. Better awareness of what is expected of trainees in different circumstances, will further decrease role ambiguity and conflict, including explicit, constructive feedback on performance.
References


Appendix 1
An exploration of second year trainee clinical psychologists’ experiences of their dual status as clinicians and postgraduate students, with a focus on potentially conflicting aspects.

Interview schedule

1. Could you describe (removed - what you see as the various aspects of) your role as a trainee clinical psychologist?  
[If the participant volunteers only two or three aspects, prompt for further aspects]

2. Other researchers have attached importance to the clinician and student aspects of the role. [If the trainee has not volunteered these aspects in response to question 1, ask: How relevant does that seem to you?]. I know this might seem like a very general question but what is it like to be both a clinician and a student?

(If interviewee says that two roles are different, then explore possible conflict and use prompt)

- It sounds like your roles are quite different. How do you manage to hold the two roles at the same time?

(If the interviewee does not differentiate between the two roles, then use prompt)

- Bearing in mind that you have to work as a clinician and a student, in your experience how do you feel that these two roles are similar and/or different?

3. Do you identify with one particular role more than the other?  
[If yes: Why do you think that is? How is that reflected in what you do or how you are on the course?]  
[If no: Why do you think that is?]

4. Other researchers have suggested that a trainee’s identity with the different roles changes during training. Could you describe your experience of how your role as a trainee has developed since joining the course?

Prompts

- What if any changes have you noticed from the first year to the second year?  

(If the interviewee implies that there has been a change, then use prompt)

- How have you managed that change?

Is there is anything that you consider important about the way you have managed the clinician and student role that hasn’t been covered in the interview?
Appendix 2
Please could you complete the following details

1. Age
   - Under 25
   - 25-30
   - 31-35
   - 36-40
   - 41 plus

2. Gender
   - Male
   - Female

3. Relevant work experience before clinical psychology training
   - Assistant psychologist
   - Research assistant
   - Clinical / Research post
   - Nursing assistant
   - Other (please specify)

4. Years of relevant work experience (see question 4.) before clinical psychology training
   - 0-1 year
   - 1-2 years
   - 2-3 years
   - 5 years plus

5. Academic qualifications (other than psychology undergraduate degree)
   - Conversion degree
   - Masters
   - PhD
   - Other (please specify)

6. Placements experienced on training
   - Adult Mental Health
   - Learning Disabilities
   - Child
   - Older Adult
   - Specialist placement (please specify)

7. Ethnicity
   - White – British
   - White – Other (please specify)
   - Asian – Indian
   - Asian – Other (please specify)
## Appendix 3

### Demographics for qualitative research

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Relevant work experience</th>
<th>Years experience</th>
<th>Academic qualifications</th>
<th>Placement experienced on training</th>
<th>Ethnicity</th>
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<td>31-35</td>
<td>F</td>
<td>Psychiatric nurse</td>
<td>5+</td>
<td>Masters RN (Mental health)</td>
<td>AMH, LD &amp; CMH</td>
<td>White-British</td>
</tr>
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<td>4</td>
<td>PhD</td>
<td>AMH, LD &amp; CMH</td>
<td>White-British</td>
</tr>
<tr>
<td>25-30</td>
<td>M</td>
<td>Assistant psychologist Nursing assistant</td>
<td>2-3</td>
<td>None</td>
<td>AMH, LD &amp; CMH</td>
<td>White-British</td>
</tr>
<tr>
<td>25-30</td>
<td>F</td>
<td>Assistant psychologist Undergraduate placement</td>
<td>2-3</td>
<td>None</td>
<td>AMH, LD &amp; CMH</td>
<td>White-British</td>
</tr>
<tr>
<td>25-30</td>
<td>F</td>
<td>Clinical/research post Resource officer</td>
<td>5+</td>
<td>None</td>
<td>AMH, LD &amp; CMH</td>
<td>White-British</td>
</tr>
</tbody>
</table>
Could you describe to me what you see your role as a trainee clinical psychologist?
I suppose I see different roles. Um... one role I suppose is as an employee, being paid for by the NHS... um and I'm just talking off the top of my head now .. it's something about .. um.. your being paid to do a certain amount of clinical work...there's something you know.. you are actually being paid as a professional to do a certain amount of work. Also there's something about...um.. very much the role feels about learning and trying to become a good clinical psychologist and that's sort of in a variety of areas. I suppose actually I see it split into two. One is sort of research and academic type things and one is the more clinical sort of focus. So the two main roles are research and clinical and also perhaps a role as a student and a role as an employee.

Do you see them all as very different or do you see overlaps?
Um...I suppose I see overlaps. Though it can feel different, sometimes it can be you know one day you're sitting in lectures and you're writing an essay and you're very much in a student role and then another day you might be in a department in a very much more clinical and more professional role. But, I suppose what joins them all together for me, is that it's always about learning. Okay, sometimes it's more about the research and sometimes more in clinical practice, but they seem quite strongly interrelated and it's all about increasing self-awareness...um.. learning more about the theories, learning about putting them into practice and being more reflective and empathetic, that sort of thing.

How do you manage the different roles?
To be honest, I like it I think. I like the fact that there are different aspects to it. I see myself trying to continue this so that in future I'd see myself as wanting to have a part university job and a part clinical job. I think I'd find that more interesting. Coming back to the question, for me it doesn't feel as though I'm having to manage anything. It feels more that I like the fact that I am doing different things. The fact that I'm still learning all the time, because I very much enjoy that. Also it's not just theoretical, there's also an application as well.
So you enjoy the variety, but you can see that there is a kind of common theme between them all that links them together.

One thing that occurs to me. Sometimes there can be a clash between the different roles. You have to prioritise things. So, I suppose the classic example would be if I deciding whether I'm going to be doing some preparation for clients, or if I've got a piece of coursework to hand and then usually what would happen... I'd think okay I'm going to be seeing the clients for a number of weeks, I'm going to rely a bit more on my supervisor this week, or whatever, because I've got to focus on the coursework. So sometimes that can be a bit uncomfortable having to make decisions about... I really need to get on with my case report now. Other stuff has got to slip a bit.

**How do you feel having to make those adjustments?**
I suppose sometimes there can be ...maybe I'm less worried about it now I'm more used to it, but sometimes there can be a slight element of guilt. Maybe that's putting it too strongly, but there's at least a worry there, a concern in the back of your mind, am I not doing the best for these clients, because I'm selfishly focusing on this piece of coursework. Not a big concern, but you have those thoughts.

**I: Are there any other similarities and differences you can see between the roles that you've mentioned?**

**P:** I suppose one big similarity that I've mentioned is the learning. Differences...I suppose similarities in terms...maybe this is related to the learning, but you're always trying to reflect on things, or ask yourself questions, or how could I have improved in this. Whether it's a theory or a client. In some ways they can be quite similar, because you can be thinking, with a theory you're trying to understand things in more general terms and to try to be critical about it, does this fit with the evidence. The same with the client, you're trying to understand this person and fit in with the evidence.

One difference maybe, it feels that when you're in the academic side of things you're more the scientist. When you're in the clinical role, there's no way...we don't understand anywhere near anything about the mind. A lot of it is done on intuition, what feels right, clinical experience, what seems right in the circumstances, without so much evidence. Maybe there's a bit of a difference there.
How easy is it to manage that difference?
Again, I wouldn't have thought of it in terms of difficulty. It's more something that's quite interesting I find, because it's I suppose a different way of looking at things. It's a slightly different set of skills you're trying to apply, theories to people and then also understand them and then bringing other things as well. Maybe sometimes what I do find a bit more difficult is when...we've been doing some projective tests at the moment in the child placement. So, I don't know if you know the CAT, a series of pictures of animals and each one you have to tell a story and then you'll make interpretations, so there's not a lot of food on the table and they're going hungry. So an interpretation might be, they're not being nurtured properly. It's not directly about food, it's about comfort. Part of me...you know if you're building up a theme, but part of me is also uncomfortable with that and would like to be able to know what the evidence base for this is more and maybe part of the difficulty about managing...I don't know whether this comes into roles, is the lack of time. So, ideally with all the clinical techniques I like to go away and have some sense of what the evidence base for this is, rather than just having to rely on them, but it doesn't feel that there's quite the time. I'm not quite sure if that's answering the question, I don't know?

Do you identify with one role more than the other?
I suppose maybe slightly more the research role. Perhaps because I've had more research experience than clinical experience. And if I saw myself, I suppose the job I'd like is on a training course like this eventually, part clinical, part teaching. I see myself as a research tutor or something like that, not a clinical tutor. If I was given a choice of going completely into research, ideally I'd want research and clinical, I might go completely into research and not be happy about it, but I might prefer that than going completely into clinical.

I: Why's that?
I enjoy the research and it depends a lot on how it goes. There was a period in my PhD when it didn't go so well. I get different things from research and clinical work, but if I was forced to make the choice between the two, I'd probably opt for research. But then maybe that's because I haven't done so much clinical work.

It's down to your experience so far?
I don't feel so good at the clinical work, I don't feel so confident at it. I haven't seen...I've seen some positive outcomes. When I see more positive outcomes, it makes it seem more worthwhile. If I see people for a short while, there's a huge long waiting list and it doesn't make much difference, then it's what am I doing this for. Ideally what I want is a mixture of both, but if you force me to choose at the moment, then it's more research.
Because of where you are and your experience.

Yes, but that could change and ideally as I say a mixture.

Could you describe how your experience...your role as a trainee has changed since you joined the course? Some researchers have said that a trainee’s identity varies at different stages throughout the course.

I suppose I’ve gone back into a more student or school type mode a bit. When I was doing my PhD...you’re more the student bit, but then if you intend to follow the research path you’re more going into postdoctoral research and things, so it wouldn’t be like a student, it would be more like an academic, you’d further along the career path. Whereas here, it feels like we’re back in a classroom situation, more in a student sort of role, asking questions and being presented with information, rather than go away and read the papers, go to a conference and ask one question, but forming your own ideas. And also writing essays and having them back and being marked. Again you’re back into the more student sort of role. I’m used to having supervision from research and now it’s clinical, so maybe that’s similar, going to someone for advice on what you’re doing. A big difference... I suppose one difference...there’s part of the identity as a professional or a clinician, which I didn’t have before. People are coming to you. You help them sort out some of their difficulties. In some cases, people are looking at you for expert advice. That’s something I find quite uncomfortable.

Why do you find it uncomfortable?

It depends what area it is in. In adult mental health, I felt more comfortable, but with child especially, some parents are having trouble disciplining their children and they say to you what would you do in these circumstances. You’re sitting and thinking how on earth would I know, having never had that experience. At least in my placement it feels that part of it is about being expert...it’s not all about being expert, but part is about helping parents who because of their upbringing haven’t necessarily got all the parenting skills, say you might to try this or you might want to look at that. Whereas with adult mental health, the person is very much the expert on themselves and you’re helping them to look at that and suggest some techniques and there were things that I could relate to myself. I could have tried some of the techniques on myself and have some experience of them. Whereas with children, I have very little experience of them, I haven’t got my own children. That feels more comfortable.

How does that compare to being in the student role?

I suppose there’s less responsibility in the student role. You can be more inquisitive. Okay you’ve got to get your essays and your case report done and you can take your time in the
student role. If you're not sure of anything, you can ask, whereas you're wanting to give some sort of response and it's strange because in the child placement I feel more undermined in myself. I might say I'm not quite sure about that, but I'll go and talk to my supervisor and we'll come back and talk about it next week. In adult mental health I felt okay, I'd seen the person longer, we didn't have to have all the answers. But for the child I found that more difficult with some of the parents and my interpretation, my feeling is why the hell are they coming along to this person. He's telling us, well not quite telling us...the implication is we're not quite parenting and yet he's a trainee, so I feel more undermined. In terms of roles, that is more difficult.

Are you saying that you can identify more now as a clinician than since when you started the course? Do still feel as much as a student?

I think it depends on the placement you're in. Towards the end of the adult mental health placement I felt more like a clinician. I could read things myself and I wasn't coming up with ground breaking ideas, but tiny little things that were maybe a slightly different way of seeing things, a little suggestion in CBT of some other way they could do something. I felt good about that...you know with a lot more experience I could see myself doing this...I'm not too bad at this, I could see myself being a clinician, so I was getting more into the clinician sort of role and liking that and seeing some positive outcomes. Learning disabilities, I suppose it slipped back a bit. maybe you're offering more advice to people, but a lot of it was common sense, so sort of okay. Child though, I suppose because of the novelty of it, maybe I feel less confident about it now, I don't know what it says about my clinical identity. It's not like a clear progression across the course and if I was to go back into adult mental health now I'd feel that because of my learning disability, child experience, my adult mental health clinician identity would be stronger, but as a child clinician it's dropped compared to the adult.

I: So it sounds as if you're having to create your own clinical identity in each placement and they all vary depending on the nature of that placement?

Maybe I'm not quite sure what clinical identity means.

It's just how you see yourself as a clinician.

I do feel differently about myself as a clinician in different circumstances and depending on the client group you're working with. I feel there's a progression with the adult mental health and that has been getting stronger over the course, with these little fluctuations, but with these other groups they're probably improving, but you've gone backwards, because you're working with a new group again.
Lastly, is there anything important about the way that you have managed the student and the clinician role that hasn’t been covered in this interview or the other roles that you have mentioned?

The only that I can think of briefly. The other thing related to the clinician role is the role of professional, in terms of risk assessment and child abuse. I suppose the main way I’d say I’d managed that was taking things to supervision if I’m not sure about things. It still feels as though I’m passing the buck. There’s still quite a lot of responsibility there and in the end I’m passing the buck...ish. That’s how I feel I’m dealing with it. I don’t think I’ve ever had a case where that has been a hugely strong issue, but what has stopped me worrying about that a lot is my supervisor’s responsibility in the end. I can’t think off the top of my head of much else.

I: That’s great. Thank you very much for taking part in the interview.
Appendix 5

Category definitions

Previous Experience
This category was concerned with trainees' clinical, academic and research experiences before they commenced clinical psychology training. It encompasses comments about how trainees tended to feel more confident and comfortable with training experiences that they had encountered prior to clinical training (e.g. working with adult clients with mental health difficulties). They were therefore more likely to identify with these particular roles (e.g. experience as a research assistant prior to training tended to result in trainees identifying with the research role). Trainees also commented on how the course emphasised the importance of presenting "what you don't know" (i.e. learning needs) unlike pre-training experiences where "what you know" seemed more significant. Comments were also made about how the compulsory nature of teaching sessions on training differed to previous experiences of academia, where attendance tended to be voluntary. Some trainees relied on their previous experience of research supervision to inform them of the purpose of clinical supervision.

Definitions and experiences of the role of trainee clinical psychologist
This category is concerned with how trainees defined the different roles of a trainee clinical psychologist. Roles consisted of student and professional / clinician. The clinician role involved being seen to work as a professional, being paid and having a responsibility to see and treat clients. In this role, trainees felt that they were perceived by others as more knowledgeable than in the student role. The student role was broken down by participants into an academic and a research role. This role was perceived as entailing less responsibility and was more about fitting back into the undergraduate student role of not knowing and being there to learn. The academic aspect involved being taught to and being set academic deadlines. Research consisted of the doctoral thesis and smaller research projects undertaken by the trainees. It also referred to the trainees' personal experiences of the identified roles, including their attitude towards the different roles and the importance that they attached to each of them.

Coping strategies
This category is concerned with strategies that trainees adopted to cope with having several roles and the demands that the different roles place on the trainee. Some strategies involved linking aspects of the various roles to make them more cohesive, whereas other strategies
involved keeping the roles quite separate, but being able to switching switch between the
different roles. Other coping strategies included accepting that there are different roles and
that accepting this fact made it easier to cope with the different roles. Social support from
other trainees was also an important coping strategy for trainees, allowing comparison with
stresses that other trainee’s experienced and being able to realise that personal anxieties and
stresses were shared by other trainees and that talking to others provided a useful source of
coping with difficulties that the different roles involve.

Role management
This category was concerned with the management and adjustment to the different aspects of
being a trainee clinical psychologist and role identity. A number of key areas were described
by participants as central to this category, including the process of developing and adjusting to
the training roles. The process of role development encompasses the presence or absence of
change in relation to participant’ management of the different aspects of the roles. A major
aspect of this category was specific areas of development including clearer expectations of
course requirements, more established preferences for models of working and personal
responsibility for development. The second key aspect was mechanisms of adjustment to the
roles. Participants reported a number of approaches to this including the use of organisational
skills such as prioritising and time management and the concept of being ‘good enough’, that
is a shift in their expectations of themselves in relation to managing the demands of clinical
and academic work.

Imposed structure
This category is concerned with the structure imposed on the trainee clinical psychologist in
terms of their division of time and the course requirements. The imposed structure of time
entails the trainee attending the University for lectures on Mondays and Tuesdays (academic
days), and attending their clinical placement for the remainder of the week (placement days).
Within the placement days half a day each week is allocated study time. This division of time
was seen by some trainees as an imposed separation of the student and clinician roles of the
trainee, and was often described as an imposed way of managing these different roles.
Consequently, on academic days trainees tended to regard themselves as students, and on
placement days they tended to regard themselves as clinicians. The structure of course
requirements refers to the structure of academic days and course assignments. The course
requires that all trainees attend all lectures. The lecture timetable and contents are devised by
the course. Some trainees reported that this imposed structure meant that some lectures were
less relevant to them due to their previous knowledge or experience, or that they were not
relevant to their clinical work on placement, and hence this was described as a further separation of the student and clinician roles. In terms of assignments, these were described as structured in terms of their focus, hence trainees were obliged to follow this imposed structure.

Conflict
This category refers to the conflict trainees reported experiencing as a consequence of their different roles. Conflict appeared to result from three main sources. Firstly, a lack of identity with the student role. Trainees felt frustrated and disempowered by the constraints of the student role compared to their clinical role. They reported feeling “patronised” and as though at times they “were not being taught anything” and so the student role was “a waste of time.”

The second source of conflict was the trainee’s perception of a discrepancy between the level of competence expected of them in the student versus the clinician roles. They felt that in their role as a clinician they were expected to have a higher level of competence than they actually had, whilst as students they were treated as though they were incompetent.

The third source of conflict appeared to be competing pressures from the different environmental settings in which trainees perform the student and clinician role. Swapping between the different atmospheres in the different environmental settings created conflict between the trainees’ identities with each role. Such conflict was expressed in feelings of guilt about unequal dictation of time between the roles, feelings of rebellion towards the student role or feeling as though they were being deceitful in their portrayal of themselves as clinicians.

Future expectations
The category of future expectations was concerned with trainee’s ideas and aspirations about the types of positions and jobs they will be doing when they qualify. A number of important aspects emerged including a desire to focus on clinical aspects of the role, wanting a mixture of different roles combining clinical and research aspects. Future aspirations emerged as an important motivating factor for completing training. A further aspect of this category was the theme of ambiguity as an aspect of psychology. It was anticipated that future roles would incorporate some of the ambiguity experienced during training due to the inherent ambiguity of the role of a psychologist and the process of continual professional development.
Appendix 6

Example of a category card

Category 31 Future expectations

A lines 130-132 A wanting to be a clinician when finishes rather than academic.

B lines 143-148 B wanting to be a clinician, not an academic or a research psychologist

B lines 159-160 B wanting to be a clinician

C lines 25-28 C liking different aspects of roles and wanting to pursue this in the future.

C lines 90-96 C wanting to do research but clinical as well.

Links with
  - Impact of past experience
  - Conflict arising from research role

Earlier labels Future aspirations
Appendix 7 Map of the process of analysis
Showing how the initial categories were integrated into the final model
Note: Numbers denote the original 19 categories identified from the data.

Key:
- Strong causal link grounded by participants' comments
- An association grounded by participants' comments
- Tentative causal link interpreted by researchers

1. Previous experience

Definitions and experience of the role of the Trainee
Clinical Psychologist
Integrated categories:
2. Defining roles
3. Experience of the roles
4. Experience of the research role
5. Experience of the student role
6. Experience of the professional/clinical role

Managing the roles
Integrated categories:
7. Identifying with a specific role
8. Role development
9. Role adjustment

10. Imposed structure of time

Coping strategies
Integrated categories:
11. Wearing different hats
12. Peer support
13. Role amalgamation
14. Resigned to the role

15. Conflict
Integrated categories:
15. Conflict resulting from perceptions of competence
16. Conflict resulting from environmental expectations
17. Conflict resulting from the student role
18. Conflict resulting from ambiguity of role

19. Future expectations
Major Research Project

Can an implicit traumatic response be observed on a modified Stroop paradigm in patients who have suffered a closed head injury following a road traffic accident with amnesia for the traumatic event?

Year 3

July 2003
Abstract
A modified Stroop task was used to investigate the suggestion that implicit memory may be a possible mechanism for the development of acute stress disorder (ASD) in patients who have suffered a closed head injury. Three groups of hospital patients were compared within 1 month post-trauma: road traffic accident (RTA) patients with a head injury (n = 15), RTA patients without a head injury (n = 13), and a control group of orthopaedic and plastics patients (n = 15). Participants named colours of 5 types of words: RTA-related words (e.g. emergency), words related to hospitalisation (e.g. treatment), obsessive-compulsive disorder (OCD) words (e.g. contamination), positive words (e.g. kindness), and neutral words (e.g. maintenance). Participants were administered the Acute Stress Disorder Interview (Bryant, Harvey, & Dang, 1998) and the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Luchene, Vagg, & Jacobs, 1983). Both RTA patients with and without a head injury demonstrated greater interference on words related to a RTA, than words related to hospitalisation, or positive words. Significant interference was also unexpectedly observed for OCD words in RTA patients. Control patients did not display significant interference effects. No significant correlations between interference, severity scores for ASD, or state and trait anxiety were observed. Findings suggested that both patients with and without explicit recall for a RTA, responded similarly on a task involving implicit memory for trauma. Evidence may exist for implicit memory for trauma in closed head injury. Possible implications for ASD and Posttraumatic Stress Disorder are discussed.

Acknowledgements
The author wishes to thank all the patients who made this research possible, the hospital staff for their assistance, and both university and field supervisors for their assistance in the planning and implementation of the study.
Introduction

It is now widely recognised that individuals can be traumatised by exposure to threatening situations, for example, rape, disasters, and events such as road traffic accidents. However, controversy exists as to whether someone can be traumatised by an event that they cannot remember. This debate is particularly applicable to patients who incur a closed head injury with amnesia for the event, such as a road traffic accident. If you cannot remember an event, how can you be traumatised by it? However, the literature suggests that patients who have sustained a closed head injury and cannot remember the accident can be at risk of developing psychiatric conditions such as Posttraumatic Stress Disorder and Acute Stress Disorder. The present study aims to further investigate this question. Posttraumatic Stress Disorder and Acute Stress Disorder are first briefly described before moving on to their empirical status in the area of closed head injury.

Posttraumatic Stress Disorder (PTSD)

PTSD as a diagnostic category emerged from the traumatic experiences of war. It developed from early descriptions of "shell shock" during the time of World War II to more substantial recognition following the Vietnam War (Yule, 1999). Formal diagnostic recognition occurred with its inclusion in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, American Psychiatric Association, 1980). A diagnosis of PTSD is now applied to exposure to traumatic events that include assault, rape, and road traffic accidents. Current diagnostic criteria are listed in Table 1.

Research into the epidemiology of trauma, suggests that exposure to traumatic events may be reasonably common. Norris (1992) found that 69% of a sample of 1000 Americans had experienced at least one traumatic event in their lifetime and 21% had done so in the previous year. Tragic death was the most frequent. Sexual assault gave rise to the highest levels of PTSD and road traffic accidents presented the most adverse combination of frequency and impact. For road traffic accidents, there was an estimated lifetime frequency of 23%, giving rise to 28 seriously distressed people per 1,000 in the United States. Lifetime exposure was higher amongst males than females, and exposure in the past year was higher amongst younger adults. Previous traumatic experience was also found to be important in determining current levels of perceived stress, particularly with events occurring in the last year.
Table 1. DSM-IV diagnostic criteria for Posttraumatic Stress Disorder (American Psychiatric Association, 1994).

## DSM-IV Diagnostic Criteria for Posttraumatic Stress Disorder

### Criterion A

The person has been exposed to a traumatic event in which both the following were present:

1. the person experienced, witnessed or was confounded with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
2. the person’s response involved intense fear, helplessness, or horror.

### Criterion B

The traumatic event is persistently re-experienced in one (or more) of the following ways:

1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.
2. recurrent distressing dreams of the event.
3. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated).
4. intense psychological distress at exposure to internal or external clues that symbolise or resemble an aspect of the traumatic event.
5. physiological reactivity on exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event.

### Criterion C

Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three or more of the following:

1. efforts to avoid thoughts, feelings, or conversations associated with the trauma.
2. efforts to avoid activities, places, or people that arouse recollections of the trauma.
3. inability to recall an important aspect of the trauma.
4. markedly diminished interest or participation in significant activities.
5. feeling of detachment or estrangement from others.
6. restricted range of affect (e.g. unable to have loving feelings).
7. sense of foreshortened future (e.g. does not expect to have a career, marriage, children, or a normal life span).
Major Research Project

Criterion D
Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

1. difficulty falling or staying asleep.
2. irritability or outbursts of anger.
3. difficulty concentrating.
4. hypervigilence.
5. exaggerated startle response.

Criterion E
Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

Criterion F
The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Recent interest has developed in the early stages of reactions to trauma, within the first month. This has culminated in the new inclusion of Acute Stress Disorder as a diagnostic category in DSM-IV (American Psychiatric Association, 1994). Acute Stress Disorder entails subtle differences in diagnostic criteria, however the origins are not new.

Acute Stress Disorder (ASD)
The earliest theorising can be dated back to 1887. Charcot (1887: cited in Bryant & Harvey, 2000) postulated that a traumatic experience could evoke a reaction similar to a hypnotic state or state of “dissociation.” Janet (1907: cited in Bryant & Harvey, 2000) hypothesised that “dissociation” from the trauma served to reduce discomfort, but paradoxically resulted in decreased psychological functioning. Reintegration of the traumatic memories was required for adaptation to the event. It was not until the 1980s that this interest in “dissociation” re-emerged. ASD was formally recognised in 1994 (American Psychiatric Association, 1994), which enabled recognition of the significant distress that people experience in the first month following a trauma (Koopman, Classen, Cardeña, & Spiegel, 1995).

Particular differences from PTSD include an emphasis on “dissociative” features, such as depersonalisation, emotional numbing, and derealisation. Diagnostic criteria for ASD are presented in Table 2.
**Table 2. DSM-IV diagnostic criteria for Acute Stress Disorder (American Psychiatric Association, 1994).**

<table>
<thead>
<tr>
<th>DSM-IV Diagnostic Criteria for Acute Stress Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criterion A</strong></td>
</tr>
<tr>
<td>The person has been exposed to a traumatic event in which both the following were present:</td>
</tr>
<tr>
<td>1. the person experienced, witnessed or was confounded with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.</td>
</tr>
<tr>
<td>2. the person's response involved intense fear, helplessness, or horror.</td>
</tr>
<tr>
<td><strong>Criterion B</strong></td>
</tr>
<tr>
<td>Either while experiencing or after the distressing event, the individual has three (or more) of the following dissociative symptoms:</td>
</tr>
<tr>
<td>1. a subjective sense of numbing, detachment, or absence of emotional responsiveness.</td>
</tr>
<tr>
<td>2. a reduction in awareness of his or her surroundings (e.g. &quot;being in a daze&quot;).</td>
</tr>
<tr>
<td>3. derealisation.</td>
</tr>
<tr>
<td>4. depersonalisation</td>
</tr>
<tr>
<td>5. dissociative amnesia (i.e. inability to recall an important aspect of the trauma).</td>
</tr>
<tr>
<td><strong>Criterion C</strong></td>
</tr>
<tr>
<td>The traumatic event is persistently reexperienced in at least one of the following ways: recurrent images, thoughts, dreams, illusions, flashback episodes, or a sense of reliving the experience; or distress on exposure to reminders of the traumatic event.</td>
</tr>
<tr>
<td><strong>Criterion D</strong></td>
</tr>
<tr>
<td>Marked avoidance of stimuli that arouse recollection of the trauma (e.g. thoughts, feelings, conversations, activities, places, people).</td>
</tr>
<tr>
<td><strong>Criterion E</strong></td>
</tr>
<tr>
<td>Marked symptoms of anxiety or increased arousal (e.g. difficulty sleeping, irritability, poor concentration, hypervigilence, exaggerated startle response, motor restlessness).</td>
</tr>
</tbody>
</table>
Criterion F

The disturbance causes clinically significant distress, or impairment in social, occupational, or other important areas of functioning or impairs the individual's ability to pursue some necessary task, such as obtaining necessary assistance, or mobilising personal resources by telling family members about the traumatic experience.

Criterion G

The disturbance lasts for a minimum of 2 days and a maximum of 4 weeks and occurs within 4 weeks of the traumatic event.

Criterion H

The disturbance is not due to the direct physiological effects of a substance (e.g. a drug of abuse, a medication) or general medical condition, is not better accounted for by Brief Psychotic Disorder, and is not merely an exacerbation of an existing Axis I or Axis II disorder.

Closed head injury

Closed head injury usually involves an alteration of consciousness, neurological impairment, and cognitive deficits. It is a process that evolves not only hours and days after injury, but also weeks and months later (Lucas, 1998). Involvement in a high velocity impact such as a road traffic accident may lead to a variety of brain damage. Brain rotation in closed head injury may cause both focal and diffuse lesions that are independent of the site of impact (Richardson, 2000). Brain areas particularly susceptible are the frontal and temporal lobes (Courville, 1950: cited in Richardson, 2000), which are involved in executive functioning and memory amongst other functions. This is largely due to the soft brain accelerating inside the skull on impact and hitting bony projections of the base of the skull. Brain rotation also exerts pressure on axons, leading to axonal straining, which can lead to downregulation of biochemical functioning of the neuron, or axonal shearing, where axons can be severely damaged and lead to degeneration of surrounding brain areas. This is termed “diffuse axonal injury” (Richardson, 2000). White matter is particularly susceptible (Bigler, 2001), often producing slowed processing and inefficiency. As well as primary injury to the brain, secondary injury can occur as a result of brain swelling, due to raised intracranial pressure and intracranial bleeding (Richardson, 2000). Closed head injury can result in varied and extensive areas of brain injury and dysfunction.

Approximately 70% of closed head injuries result from road traffic accidents (Ponsford, 1995). The incidence of hospitalisation following closed head injury in Britain and the United
States is estimated at 200-300 per 100,000 of the population (Jennett & MacMillan, 1981). The gender ratio is roughly two to three males for every female, with the majority of victims aged between 15 to 24 years of age (Andersen & McLaurin, 1980: cited in Ponsford, 1995). This population has been found to have higher than average pre-morbid psychological problems, including a history of psychopathology, substance abuse, especially heavy alcohol consumption and poor academic performance (Bond, 1984; Haas, Cope & Hall, 1987; Rimel & Jane, 1984). Closed head injury has also been found to be more prevalent amongst the lower socioeconomic classes and amongst people who are unemployed (Rimel & Jane, 1984).

There are several important sequelae of closed head injury that are pertinent to the area of ASD and PTSD. These are posttraumatic amnesia and post-concussional syndrome. Posttraumatic amnesia can be used as a guide to the severity of closed head injury, whilst post-concussional syndrome can have many similar symptoms to Acute Stress Disorder or Posttraumatic Stress Disorder.

Posttraumatic amnesia
This presents as a state of confusion and disorientation with particular memory disturbance for events occurring immediately after the head injury (anterograde amnesia), (Lucas, 1998). Behavioural disturbance includes agitation, restlessness, confabulation, fatigue, and occasional serious affective and psychotic symptoms (Ahmed, Bierley, Sheikh, & Date, 2000). Length of posttraumatic amnesia has been defined as from the time of injury to when "the patient can give a clear and consecutive account of what was happening around him...by careful questioning after recovery of full consciousness and normal orientation (Symonds & Russell, 1943: cited in Ahmed et al., 2000)." Some variation exists in calculating the length of posttraumatic amnesia. The traditional definition includes length of coma. However, Levin, Benton, and Grossman (1982) propose that posttraumatic amnesia should be measured from the end of coma, because otherwise someone who has been in a lengthy coma can have the same level of posttraumatic amnesia as someone with a shorter coma and greater period of post-traumatic confusion. This definition is not universally adhered to in the literature. In support of the latter definition, the duration of posttraumatic amnesia is more useful in determining outcome following head injury than length of coma, with longer posttraumatic amnesia associated with more severe head injury (Greenwood, 1997).

Retrograde amnesia, or a lack of memory for events preceding the head injury has previously been considered as a measure of the severity of outcome following head injury (Lishman, 1998). However, the period of retrograde amnesia in most head injuries is very brief, usually
accounting for a few seconds, or a minute. The brief nature of retrograde amnesia renders it less useful as a guide to severity of head injury than the variable nature of posttraumatic amnesia (Lishman, 1998).

Typical classifications of posttraumatic amnesia (PTA) are: -

- PTA less than one hour (mild head injury),
- PTA for 1-24 hours (moderate head injury),
- PTA greater than 24 hours (severe head injury) (Lucas, 1998).

However, the Mild Traumatic Brain Injury Committee of the Special Interest Group of the American Congress of Rehabilitation Medicine (1993) classify mild head injury as posttraumatic amnesia of less than 24 hours.

The majority of head injuries sustained are mild. Jennett and MacMillan (1981) estimated that only one in five patients with closed head injury sustain a moderate to severe injury.

Memory deficits in posttraumatic amnesia, such as anterograde amnesia are well documented, as well as orientation difficulties. Memory storage is not affected as such, but rather the temporal sequencing of memories (Schnider & Gutbrod, 1999). In the acute stages of head injury, deficits in all areas of attention can usually be observed, such as sustained, selective and divided attention, but in the chronic stages it is usually only divided attention that remains impaired (Schnider & Gutbrod, 1999).

Neurotransmitter upregulation, especially of acetylcholine has been implicated in the development of posttraumatic amnesia. Acetylcholine rapidly increases in areas such as the hippocampus and thalamus following closed head injury (Saija, Hayes, Lyeth, Dixon, Yamamoto, & Robinson, 1988). In the acute phase post head injury, posttraumatic amnesia is associated with increased levels of acetylcholine and paradoxically with decreased levels of acetylcholine maintaining memory deficits after a greater period of time (Dixon, Liu, Jenkins, Bhattachangee, Whitson, Yang, & Hayes, 1995). Nissen, Knopman, and Schacter (1987) have demonstrated that the use of an acetylcholine inhibitor (scopolamine) has induced memory deficits in normal volunteers. In addition, deficits were in explicit declarative memory, but not implicit memory, such as procedural memory. Cohen and Squire (1980) have also found intact procedural memory in patients with posttraumatic amnesia.
Post-concussional syndrome

Post-concussional syndrome refers to symptoms that emerge following head injury that include: dizziness, headaches, fatigue, reduced concentration, irritability, memory dysfunction, sleep disturbance, sensitivity to noise / light, double or blurred vision, anxiety and depression (Jacobson, 1999). These symptoms are typically reported following mild or moderate head injury (Jacobson, 1999; King, 1996). Symptoms usually resolve by 3 months post-injury, although a significant number can persist at 3 months and some at 12 months (Jacobson, 1999).

There may be many overlaps in symptoms of post-concussional syndrome and PTSD or ASD, such as reduced concentration, irritability, and sleep disturbance. In addition, dissociative symptoms such as reduced awareness, derealisation, depersonalisation, and amnesia for the event may be caused by either PTSD or post-concussional syndrome (Grigsby & Kaye, 1993).

The traditional view of post-concussional syndrome as solely organic is now outmoded. Organic and psychosocial factors have been found to be involved in both the onset and maintenance of post-concussional syndrome (Fenton, McClelland, Montgomery, MacFlyn, & Rutherford, 1993; Montgomery, Fenton, McClelland, MacFlyn, & Rutherford, 1991). Bryant and Harvey (1999a) found that patients with mild head injury and PTSD were more likely to report post-concussional syndrome symptoms than those without PTSD.

Head injury and posttraumatic stress disorder

The co-existence of head injury and PTSD is an area of particular controversy. Some studies suggest that head injury may be protective against developing PTSD.

Mutual exclusivity of head injury and posttraumatic stress disorder?

Mayou, Bryant, and Duthie (1993) assessed 188 road accident victims aged 18-70, with multiple injuries or whiplash. They excluded anyone who was unconscious for more than 15 minutes. On hospital admission, victims were given a semi-structured interview, covering demographic information, details of the accident, and social and psychiatric history in the month prior to the accident. The Eysenck Personality Inventory (Eysenck & Eysenck, 1992), the Beck Depression Inventory (Beck, 1978) and the State-Trait Anxiety Inventory (Spielberger et al., 1983) were also used. A semi-structured interview was conducted at three months and one year post-accident, based on DSM-III-R criteria¹ for posttraumatic stress

¹ DSM-IV criteria differ to DSM-III-R criteria in that “physiological reactivity” has been moved from the arousal criterion to the intrusion criterion.
disorder (American Psychiatric Association, 1987). PTSD was associated with "horrific memories" of the accident, which were not present in those who had been knocked unconscious. They further reported that 31 (18%) initially presented with an "acute stress reaction," associated with horrific memories and emotional disturbance. It is uncertain whether this would constitute ASD retrospectively. People with "acute stress reactions" had a poor prognosis, with nine developing PTSD 1 year after the event. Only 5/31 had no psychiatric consequences. Their reaction was associated with neuroticism and no loss of consciousness. However, there are many criticisms. No formal diagnostic interview was used for both the acute stages following the accidents and at three months and one year. In addition, by excluding all patients with a loss of consciousness of greater than 15 minutes, more severe head injuries were excluded.

Further support against the co-existence of PTSD and head injury was found by Warden, Labbate, Salazaar, Nelson, Sheley, Staudenmeier, and Martin (1997). They assessed 47 (46 male, 1 female) active-duty service members who had sustained a moderate brain injury through a variety of means, including motor vehicle accidents, assault or an industrial accident. They used a psychiatric interview, the Present State Examination (Wing, Cooper, & Sartorius, 1974: cited in Warden et al., 1997), adapted for use in head injury, from which questions related to DSM-III-R (American Psychiatric Association, 1987) diagnostic criteria for PTSD were extracted. Two additional questions were added to meet the re-experiencing and avoidance criteria. No participants met full criteria PTSD and only 6 met reduced criteria (A, C and D) that did not include re-experiencing phenomena. However, time intervals for assessment varied considerably, ranging from 4 months post-injury to 2 years. The reliability and validity of the adapted Present State Examination is furthermore unclear.

However, there are a number of group studies and case reports that suggest that PTSD and head injury may co-exist, but may be less likely as head injury severity increases.

Co-existence of head injury and posttraumatic stress disorder?
Feinstein, Hershkop, Ouchterlony, Jardine, and McCullagh (2002) examined the relationship between posttraumatic amnesia and PTSD symptoms. They assessed 282 (66% male) participants attending a head injury clinic. Diagnosticians were blind to the patient’s history. A clinical co-ordinator collected demographic data and details of the injury via interview and case note examination. A neuropsychiatrist examined patients separately and administered the 15-item Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979) and the 28-item General Health Questionnaire (Goldberg & Hillier, 1979). The Impact of Events Scale measures
symptoms of PTSD related to re-experiencing and avoidance. The General Health Questionnaire was used as an overall measure of psychological distress. Participants were divided according to levels of posttraumatic amnesia. 147 participants had posttraumatic amnesia less than 1 hour (mild), 70 with posttraumatic amnesia of 1-24 hours (moderate), 40 with posttraumatic amnesia of 24 hours to 1 week (severe) and 25 with a posttraumatic amnesia greater than 1 week (very severe). No statistical differences were found between the four groups in terms of intrusive and avoidance symptoms and scores on the General Health Questionnaire. Symptoms of PTSD were present even when posttraumatic amnesia exceeded 24 hours and in some cases 1 week. However, when the groups were collapsed into posttraumatic amnesia less than 1 hour and posttraumatic amnesia greater than 1 hour, intrusive and avoidant symptomatology significantly decreased when posttraumatic amnesia was greater than 1 hour, yet General Health Questionnaire scores remained constant. They suggest that the decrease in PTSD symptomatology cannot therefore be explained by affective factors. However, the Impact of Events Scale is not a diagnostic instrument, neglecting arousal posttraumatic stress disorder symptoms. The results were also based on head injuries of mixed aetiology.

Turnbull, Campbell, and Swann (2001) found that PTSD could be present in head injury patients, although less severe in nature. They specifically examined the nature of memory in relation to the traumatic event. They used the Impact of Events Scale (Horowitz et al., 1979) as a screening measure to identify participants with possible PTSD from patients admitted to an Accident and Emergency Unit. Patients with a cut-off score greater than 20 on either the intrusion or avoidance subscale on the Impact of Events Scale were followed up by telephone interview using the Clinician Administered Posttraumatic Stress Disorder scale for DSM-IV (CAPS-DX, Blake, Weathers, Nagy, Kaloupek, Gusman, Charney, & Keane, 1996). The CAPS-DX is a structured clinical interview and was used for a definite diagnosis of PTSD. The 17 possible symptoms of PTSD of DSM-IV were examined for frequency and intensity scores. Criteria 8 (difficulty in remembering parts of the event) were excluded, due to the overlap of amnesia resulting from the head injury. The Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) was used as a measure of psychological distress. On the basis of a questionnaire developed by the authors to establish memory for the event, the 55 (48 male, 7 female) respondents were divided into those who had no memory of the event, untraumatic memories of the event and traumatic memories. Memory of the event and the affective nature of the memories were important in the reporting of PTSD symptoms. Participants with either no memory of the event or traumatic memories
were more likely to meet criteria for PTSD, than those with untraumatic memories. Both the no memory group and the traumatic memory group additionally had significantly higher ratings of psychological distress on the Hospital Anxiety and Depression Scale than the untraumatic group. However, head injury did appear associated with decreased levels of PTSD symptomatology. In terms of severity, ratings of PTSD symptoms were less in the group without memory than in patients with traumatic memories. In particular, intrusive symptoms were less in the no memory group. Flashbacks, distressing dreams, avoidance of people or places that reminded them of the event and hypervigilence were the least reported symptoms. The most reported intrusive symptoms in the no memory group were psychological or physical distress in response to reminders of the event, suggesting a very different profile of PTSD. However, not all those who returned the questionnaires were interviewed. Only the four highest scores below the cut-off were interviewed, assuming that the rest would not meet criteria for PTSD. The nature of the traumatic event was also non-specific.

A prospective study of head injury and PTSD was undertaken by Wright and Telford (1996), assessing 50 patients at three months and three years post head injury. Unlike previous studies, patients were not carefully selected or screened out if they had a past psychiatric history, alcohol consumption prior to the accident or previous head injury. The study was designed to be representative of the head injured population. Assessment measures included a semi-structured interview, the General Health Questionnaire (Goldberg & Hillier, 1979), and the Impact of Events Scale (Horowitz et al., 1979). Recurrent intrusive thoughts and avoidance behaviour were reported by over half the patients, as well as emotional numbing, with decreased interest in usual activities. 83% reported at least one symptom of increased arousal. Three years later, there was no significant decrease in PTSD symptoms, with only "diminished interest" being significantly less reported. PTSD symptoms were also significantly higher than a control group matched according to age, sex, socio-economic status, marital status and psychiatric history. However, the control group did not have the additional experience of being admitted to hospital and consisted of people known on a formal and informal basis to the authors.

Rattock and Ross (1993), used the Penn Inventory for Post-traumatic Stress Disorder (Hammarberg, 1993), designed to examine PTSD in head injury. In a sample of 40 patients with head injury, 8 (20%) scored above the cut off for PTSD. Patients with brain injury scored significantly higher than normal controls, but significantly lower than Vietnam veterans with PTSD. No significant differences were found for age, sex, level of education, or
physical functionality. Outpatients who had less severe head injury (mild to moderate) had higher levels of PTSD than inpatients. Those patients who had more awareness of their difficulties also had higher ratings of PTSD. However, brain injuries were of mixed aetiology, including stroke, tumour and anoxia.

Similar findings were observed for patients who sustained a very severe head injury (mean posttraumatic amnesia: 36.97 days). Bryant, Marosszeky, Crooks, and Gurka (2000) using the PTSD Interview (Watson, Juba, Manifold, Kucala, & Andersen, 1991) found that six months post-injury 26 (27.1%) of 96 patients in a brain injury rehabilitation unit met PTSD criteria. Again, Bryant et al. (2000) suggest that the profile of PTSD may be different in head injury. Only 19.2% (N=5) reported intrusive memories of the trauma, whereas 96.2% (N=25) reported emotional and physiological reactivity, which had very strong predictive power with PTSD.

Case studies
Several case studies have further been reported in the literature, describing patients who have developed PTSD symptoms despite amnesia for the event and ranging in severity of head injury, from mild to very severe (Horton, 1993; King, 1997; Layton & Wardi-Zonna, 1995; McGrath, 1997; McMillan, 1996; McMillan, 1991; and McNeil & Greenwood, 1996).

Head injury and acute stress disorder
Recent research has also reported that acute stress disorder can co-exist with head injury.

A prospective study by Bryant and Harvey (1999b) assessed mild head injury patients for ASD within one month of the trauma, with later follow up. Consecutive patients admitted to a trauma hospital following a road traffic accident were assessed. They compared those who had sustained a mild head injury (N=79), against patients without a head injury (N=92). A diagnosis of acute stress disorder was reached using the Acute Stress Disorder Interview (Bryant et al., 1998), which has reported good reliability, sensitivity, and specificity for clinician-based DSM-IV diagnosis (Bryant & Harvey, 1999b). Patients were then reassessed six months post-trauma (mild head injury: N=63, non-head injury: N=72) using the PTSD module from the Composite International Diagnostic Interview (Peters, Andrews, Cottler, & Chatterji, 1996), which has adequate internal consistency and concurrent validity for DSM-III-R.
Levels of acute stress disorder were comparable in the mild head injury group (14%, N=11) and the non-head injury group (13%, N=12). In the acute stages, the mild head injury group were less likely to report fear, helplessness, or intrusive memories, although by six months reporting of intrusive symptoms had increased in the mild head injury group, but deceased in the non-head injury group. Dissociative amnesia was excluded from diagnosis, due to the overlap with amnesia associated with head injury.

**Predictive power of acute stress disorder for posttraumatic stress disorder**

There is reasonable evidence to support the link between ASD and the development of PTSD. Harvey and Bryant (1999b) followed up patients at two years from the previous study (Bryant & Harvey, 1999a). 80% (N=8) of patients diagnosed with ASD were diagnosed with PTSD two years later. In comparison, 8% of those not diagnosed with ASD were diagnosed with PTSD. All symptoms of ASD had fairly strong negative predictive power, i.e. PTSD was not present when ASD symptoms were absent. Those symptoms with the strongest predictive power, i.e. PTSD was present when these symptoms of ASD were, were motor restlessness, depersonalisation, recurrent images / thoughts, a sense of reliving the traumatic experience, nightmares, avoidance, reduced awareness and numbing.

**Conclusions of acute stress disorder / posttraumatic stress disorder and head injury literature**

Early research suggested that head injury and the associated amnesia for the traumatic event was protective against the development of PTSD (Mayou et al., 1993; Sbordne and Liter, 1995; Warden et al., 1997). However, there is now evolving evidence to support the co-occurrence of ASD / PTSD amongst patients who have experienced a head injury (Bryant & Harvey, 1999a,b; Feinstein et al., 2002; Turnbull et al., 2001) in a proportion of patients. In addition, research has suggested that there seem to be important differences in the profile of ASD / PTSD with head injury compared to ASD / PTSD alone. In particular, arousal is a key feature, with emotional and physiological reactivity more commonly observed than other symptoms, although intrusive and re-experiencing phenomenon can also be present. There are several theoretical explanations that have been proposed to support these findings for the development of ASD / PTSD with head injury.
Theoretical explanations of acute stress disorder / posttraumatic stress disorder in head injury

"Islands of memory"
Brief episodes of memory recall, "islands of memory" for the traumatic event have been reported by some patients with head injury, for example recalling lying in pain, hearing others scream and feeling close to death. All ten case studies reported by McMillan (1996) described such recollection. Other cases report similar findings (Horton, 1993; McGrath, 1997). It is suggested that people who are otherwise amnesic may experience intrusive symptomatology from these fragments of memory, which may then lead to development of PTSD (King, 1997). This is more likely if the period of posttraumatic amnesia is short (Harvey & Bryant, 2001).

Reconstruction of memories
Reconstruction of the traumatic memories is a further possibility. This may be through secondary sources, such as eye witness accounts, police reports or photographs (Harvey & Bryant, 2000).

Patients may then develop traumatic "pseudomemories" for the event. Bryant (1996) describes two patients with severe head injury and PTSD, who despite amnesia for the road traffic accident developed "pseudomemories," based on photographs and reports of the event. One patient experienced intrusive images, similar to a newspaper photograph of his car.

Trauma of hospitalisation
Patients may additionally have traumatic experiences associated with the hospitalisation process. Jones, Griffiths, Humphries, & Skirrow (2001) reported that patients with delusional memories of intensive care at 2 weeks post-rehabilitation, such as believing that someone was trying to kill them (doctors and nurses) were predictive of PTSD symptoms at 8 weeks post-hospitalisation. However, patients admitted with head injury were excluded from this study. However, McMillan (1991) described a patient with severe head injury, who avoided a range of situations connected with her accident, including hospitals.

Implicit memory
Early work that described an inability to recall the traumatic event as being inconsistent with PTSD was based on a unitary memory theory (Layton & Wardi-Zonna, 1995). When independent memory systems of declarative and non-declarative (or implicit) memory (Squire, 1992) are considered, the theoretical stance of PTSD and amnesia for the event is no
longer incompatible. Declarative memory refers to stored experience that is potentially accessible to conscious recollection, whereas implicit memory is not accessible to consciousness (Parkin, 1997). The declarative memory system may be disrupted in amnesia, without disrupting implicit memory. For example, the implicit memory system involves learning of motor skills, priming, classical conditioning, and habituation and sensitisation (Squire, 1992). Patients with amnesia are able to learn new skills, such as, reading words that are reversed in a mirror, despite having no conscious recall of learning the skill (Squire, Knowlton, & Musen, 1993).

Implicit memory for the traumatic event in ASD / PTSD can be explained by the biological principal of “fear conditioning.” The role of the limbic structures, in particular the amygdala and the hippocampus are discussed.

Fear conditioning
Animals that are exposed to an intensely fearful event, such as an electric shock rapidly develop fear responses: flight or fight emergency reactions, in order to evade the threatening situation. Research suggests that the limbic system, especially the amygdala has a special role (van der Kolk, 1994).

The amygdala
The amygdala is believed to be involved in adding the emotional significance to incoming sensory stimuli (LeDoux, 1995) and to guide emotional behaviour through its interconnections with the hypothalamus, basal forebrain, and hippocampus (Gallager & Holland, 1994; LeDoux, 1995). It is able to activate fear responses, such as changes in heart rate, freezing behaviour, and potentiated startle (Rosen & Schulkin, 1998). The majority of sensory processing occurs rapidly below the level of conscious awareness. Only novel, significant, or threatening information is passed on to the neocortex for greater attention. Emotional information about sensory stimuli is then combined with contextual information about the sensory input from memory, involving the hippocampus (LeDoux, 1995).

There are a number of pathways conveying information to the amygdala that affect the emotional response attributed to the incoming stimuli. The direct pathway flows from the thalamus to the amgdala, whereas the indirect pathway flows from the thalamus to the cortex to the amygdala (LeDoux, 1995). The direct thalamo-amygdala pathway is faster, but more limited in terms of representation of incoming stimuli (Bordi & LeDoux, 1994a,b: cited in LeDoux, 1995), and is able to trigger an emotional response by simple stimulus features. The
slower thalamo-cortico-amygdalo pathway involves several cortico-cortical links before reaching the amygdala (Romanski & LeDoux, 1993a,b: cited in LeDoux, 1995). These cortical links involve unimodal sensory cortex, association cortex and the hippocampus, which in turn all have projections to the amygdala (LeDoux, 1998). Figure 1. shows the circuits involving the amygdala.

Animal lesion studies of the amygdala demonstrate a failure to develop a fear response to a threatening stimulus (LeDoux, 1995). Similar results have been found in humans with unilateral temporal lobectomy including the amygdala (LaBar, LeDoux, Spencer, & Phelps, 1995).

The hippocampus
The hippocampus is considered to have a key role in explicit memory for events (Squire, 1992). In particular, it is believed to be involved in categorising and storing incoming stimuli into memory (van der Kolk, 1994), evaluating whether events that are spatially and temporarily unconnected are associated with each other, with novelty, or reward and punishment. This allows the organism to distinguish between those situations in which it is appropriate to respond in an emergency fashion and those in which it is not, for example, a tiger in the wild against a tiger in the zoo (LeDoux, 1995).

Interaction of amygdala and hippocampus
Research suggests that high level stimulation of the amygdala as a result of exposure to a traumatic event, may leave an indelible memory trace (LeDoux, Romanski, & Xagoraris,
1991). Such memory traces can only be inhibited from activating fear responses, rather than erasing them altogether. The hippocampus is considered to play an important role in inhibiting amygdaloid fear responses through its connections with the prefrontal cortex (Brewin, 2001). Hippocampal damage is linked with hyperresponsiveness to environmental stimuli (Altman, Bruner, & Bayer, 1973: cited in van der Kolk, 1994).

The fast and direct thalamo-amygdala pathway is believed to carry perceptual information about a stimulus pertaining to threat and is able to quickly activate defensive reactions. The slower indirect thalamo-cortico-amygdala pathway allows for more detailed processing of the incoming stimuli and can inhibit the fear response.

Exposure to a traumatic event differentially affects these two elements of the fear network and subsequent explicit and implicit memory for the trauma.

**Fear and memory formation**

Hippocampal memory systems have been found to be variably affected by stress hormones released in response to an acutely traumatic event, with cognitive performance affected in line with the Yerkes-Dodson inverted-U shape: when exposed to glucocorticoids, hippocampal neurone activation first increases, but then declines, resulting in impaired functioning under high levels of stress (Metcalfe & Jacobs, 1998). Subsequently, there is less contextual binding of sensory information (Brewin, 2001). Conversely, the function of the amygdala increases with raised stress levels, allowing for increasing conditioned fear responses to threatening stimuli (Pitman, Shalev, & Orr, 2000). Reduced explicit recall for the event results in reduced contextual information about the event, which prevents inhibition of the amygdala and the fear response, which can be rapidly activated by stimuli perceptually similar to the original traumatic stimuli (Brewin, 2001). This means that even without head injury, explicit recall of the traumatic event is reduced, although implicit memory for the event is enhanced. In other words, the effects of the traumatic response on memory impairment even without head injury may be similar to that which occurs in head injury, although more severe in nature.

**Explicit and implicit memory and head injury**

Significant deficits in explicit memory for the traumatic event even when there is no loss of consciousness may suggest a stronger theoretical stance for the co-existence of ASD / PTSD and head injury. Indeed, there is evidence that the main re-experiencing symptoms that occur after severe head injury are psychological distress or physiological reactivity when exposed to reminders of the trauma (Bryant et al., 1996; Turnbull et al., 2001). These features of arousal,
could be rapidly activated by fear conditioning and emotional memory connected with the amygdala. Additionally, the finding by Cohen and Squire (1980) of intact procedural, or implicit memory in patients with posttraumatic amnesia, adds further support to the possibility of memory consolidation for the trauma at the level of implicit memory.

Previous research has investigated the role of implicit memory in PTSD without head injury.

**Measuring implicit memory**

Cognitive theories of PTSD propose that people with PTSD selectively attend to threat-related material, because fear networks are activated as a result of the traumatic event (Foa, Steketee, & Rothbaum, 1989). Research suggests that people with PTSD like other anxiety disorders may selectively attend to information of a threatening nature, demonstrating hypervigilence (DSM-IV, American Psychiatric Association, 1994), due to the priming of the fear network.

The main cognitive approach used to examine this attentional bias has been the modified Stroop paradigm (Stroop, 1935). People are required to name the colour of words printed in different colours that are emotionally significant to a traumatic event. This necessitates inhibiting the automatic response to reading the word out. The correct response in the example below is: -

```
trapped saying “red” rather than “trapped”
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People with PTSD are believed to take longer to colour-name trauma related words, because the meaning of the word becomes activated despite the participants’ attempts to selectively attend to the colour. The trauma-related words may reflect an inability by the person to inhibit trauma-related information once it is activated (Metzger, Orr, Lasko, McNally, & Pitman, 1997). This could be seen to link with the theory of biological fear networks. Emotionally significant perceptual information could rapidly activate fear systems, such as the amygdala, without inhibition of response from hippocampal-prefrontal connections.

Stroop words can be presented on a single piece of card. The person is then timed on naming all the colours of the trauma-related words on the card (McNally, Kaspi, Riemann, & Zeitlin, 1990). Time to colour name trauma-related words is usually compared against the time to colour name words of neutral emotionality (matched for syllables and frequency of usage in the English language). The Stroop paradigm has been investigated with victims of combat
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(McNally et al., 1990), rape (Cassiday, McNally, & Zeitlin, 1992) and ferry disaster (Thrasher, Dalgleish, & Yule, 1994). Anxiety specific Stroop interference has also been found in other anxiety disorders, such as generalised anxiety disorder (Matthews & MacLoed, 1985), panic disorder (Ehlers, Magraf, Davies, & Roth, 1988) and social phobia (Hope, Rapee, Heimberg, & Dombeck, 1990).

However, some research has suggested that the emotional intensity of the words alone whether positive or negative may cause greater interference (Martin, Williams, & Clark, 1991). McNally et al. (1990) investigated the emotionality hypothesis in Vietnam combat veterans with (n=15) and without (n=15) PTSD using trauma-related words, positive words, and words related to another anxiety disorder: obsessive compulsive disorder (OCD). PTSD words had been given very high stress ratings by Vietnam veterans with PTSD in previous research (McNally, Luedke, Besyner, Peterson, Bohn, & Lips, 1987). Trauma-related words (bodybags, nam, firefight, medevac, charlie) were compared against neutral words (mix, millionaire, fingertips, concrete, input), positive words (love, pleasant, loyal, happy, friendship) and OCD-related words (germs, filthy, faeces, urine, dirty). PTSD participants demonstrated significantly greater interference on trauma-related words than neutral, positive, or OCD-related words. This suggested that Stroop interference was threat specific rather than attributable to the emotionality of words.

Alternatively each Stroop word can appear individually on a computer screen. Voice activation is then used to record the response latency for each word (Harvey & Bryant, 1996). Latency of responding to trauma-related words is compared against words of neutral emotionality.

Bryant and Harvey (1995) used the computer-based format with people who had been involved in a road traffic accident. Trauma-related words previously rated for emotionality in pilot work by road traffic accident victims were presented to participants. Participants with PTSD (n=15) showed greater interference on strong threat words related to the RTA (emergency, smash, scream, trapped, death, blood) that those participants with simple phobia of driving (n=15), or low anxiety (n=15). Participants with simple phobia did not show an interference effect. Strong threat related words were further compared against mild threat words (traffic, wheel, bridge, intersection, truck, driver) positive words (love, worthy, kindness, excitement, nice, smile), and neutral words (record, pause, sail, deer, blanket, pasture). No interference effect was found for PTSD participants using mild threatening or
positive words. This suggests that Stroop interference increases as the similarity between the trauma words and the participants’ concerns does (Riemann & McNally, 1995).

Does the Stroop effect reflect interference at an implicit level?

It has been questioned whether the Stroop paradigm reflects interference at a pre-attentive stage, because the nature of the task allows for conscious identification of the words (MacLeod & Hagan, 1992). To test this hypothesis Harvey, Bryant, and Rapee (1996) used the same computer format with road traffic accident victims. Words were presented for a very short period of time (20ms), followed by a backward-mask consisting of a string of “X” letters in the same colour and screen location as the stimulus words, to prevent conscious awareness of the words. Masked words were compared against unmasked words. Participants did not show significant conscious awareness of the trauma-related words, when asked to identify them as real words or non-words. Participants with PTSD demonstrated greater interference in both the masked and unmasked conditions than participants who had been involved in a road traffic accident without PTSD, and controls who had never been in a road traffic accident. This suggests that threat-related information may be processed at an implicit level. Patients who had suffered a suspected head injury as suggested by reports of posttraumatic amnesia were however excluded from the study.

Stroop interference and self-report measures of trauma

Cassiday et al. (1992) have compared the computerised emotional Stroop against self-report measures of cognitive intrusion, such as the Impact of Events Scale (Horowitz et al., 1979). Interference for high threat-related words was significantly associated with self-reported intrusive symptoms (r=.41), but not with self-reported avoidance and numbing symptoms (r=.19). This suggests that the emotional Stroop may reflect disturbances to cognitive processes at an implicit level that are reported by the individual on a conscious level. It therefore seems that there is a connection between implicit measures of trauma and explicit self-report measures.

Trait anxiety, as measured by the State-Trait Anxiety Inventory (Spielberger et al., 1983) has also been found to exert an important influence over Stroop interference, with individuals with high trait anxiety demonstrating interference on anxiety-related words (MacLeod & Rutherford, 1992).
The original Stroop paradigm and head injury

The emotional Stroop paradigm has not been used before in the head injury population. However, the original Stroop paradigm is commonly used as a measure of selective attention, to test the ability of patients to inhibit responding to distracting stimuli (Malloy, Cohen, & Jenkins, 1998). In its original form, colour names are presented in different coloured inks, for example the word red is presented in blue ink. Patients are required to inhibit the automatic response to read the colour word “red” and to name the colour of the ink “blue” instead. In the head injury population, some studies have failed to find differences between patients with severe head injury and controls on the Stroop task (Van Zomeran & Brower, 1987), leading other to suggest that the task is not challenging enough in its original form (Bohnen, Jolles, & Twijnstra, 1992). Another explanation has been that emotional disturbance, such as anxiety resulting from heightened autonomic arousal may impede performance. Testing this hypothesis, Batchelor, Harvey, & Bryant (1992) found that patients with mild head injury performed more slowly than control participants on this task, although anxiety did have some influence. Differences between the two groups emerged when trait anxiety was controlled for, but not state anxiety. However, participants were not experiencing clinical levels of anxiety. It therefore seems plausible that the emotional Stroop paradigm will be a useful assessment tool in the measurement of emotional reaction to a traumatic event, in addition to the cognitive impact of a head injury.

Self-report measures of acute stress disorder

Existing self-report measures used in ASD were developed for measuring PTSD symptoms and have been adapted for use with ASD, e.g. Impact of Events Scale (Horowitz et al., 1979) and the PTSD Symptom Scale (Foa et al., 1993). Such scales do not incorporate the dissociative criteria of ASD and the Impact of Events Scale also omits arousal symptoms. Certain dissociative scales have additionally been used e.g. Dissociative Experiences Scale (Bernstein & Putnam, 1986), but it does not incorporate other ASD criteria (Bryant et al., 1998).

The self-report measure for ASD with the most adequate data is the Acute Stress Disorder Interview (ASDI, Bryant et al., 1998). The ASDI was developed as a specific self-report measure of ASD based on DSM-IV diagnostic criteria (American Psychiatric Association, 1994). The reliability and validity of the ASDI are discussed in the Method section. The ASDI has good predictive validity for PTSD. 78% to 82% of patients diagnosed with ASD using the ASDI were diagnosed with PTSD at six months (Bryant & Harvey, 1998; Harvey & Bryant, 1998).
Gaps in the literature

In summary, the existing literature suggests that ASD, PTSD and head injury are not mutually exclusive as previously suggested. Although patients may lack explicit memory of the event due to the head injury, implicit memory has been suggested as having a role in the development of ASD / PTSD. This is based on theoretical positions, empirical evidence from non-head injury patients with ASD / PTSD, and experimental evidence of the differential effects of posttraumatic amnesia on implicit and explicit memory. Implicit memory for the traumatic event in patients has not been investigated empirically in patients with a head injury.

Aims

The modified emotional Stroop has been widely used as a measure of implicit memory for trauma in PTSD, but has not been used with patients with head injury. The primary aim of this research was to examine the existence of implicit memory for a road traffic accident in patients who have suffered a head injury, through the use of a modified emotional Stroop. The research focused on patients who were involved in a road traffic accident, using objective measures of head injury. Stroop interference for words related to a road traffic accident were compared against existing conscious self-report measures of trauma and anxiety, within the first month following the event. The role of hospitalisation and amnesia for the event as potentially confounding traumatic events was also considered, based on findings by Jones et al. (2001) and McMillan (1991), by using Stroop words related to hospitalisation associated with head injury. The confounding effect of word emotionality was taken into account, by using Stroop words of a positive emotionality and words related to another anxiety disorder (obsessive compulsive disorder, OCD).
Hypotheses

1. Road traffic accident (RTA) patients with a head injury will take significantly longer to colour name all Stroop words than RTA patients without a head injury, or control patients.

2. RTA patients with and without a head injury will show significantly more interference for words related to a RTA than for interference related to positive words, OCD related words, or words related to hospitalisation.

3. Control patients will show no significant differences in interference scores between positive words, OCD related words, words related to hospitalisation, or words related to a RTA.

4. RTA patients with and without a head injury will show significant correlations between RTA interference scores and arousal ASD severity scores and state anxiety.

5. State and trait anxiety will be significantly correlated with interference scores.

6. State and trait anxiety will be significantly correlated with severity scores for acute stress disorder.
Method

Design
A cross-sectional approach was used. A mixed between participants and within participants design was used. The three groups were road traffic accident patients with a head injury, road traffic accident patients without a head injury, and a control group. The between factors were demographic information (age, level of education); time since accident; ASD severity score; state and trait anxiety; time to complete Stroop words: neutral, positive, OCD, hospital, and RTA words. Within group factors were interference scores (positive words, OCD words, hospital words and RTA words). An a priori power analysis using G*POWER indicated that a total of 39 participants would be needed for sufficient power (Erdfelder, Faul, & Buchner, 1996). See Appendix 1 for power calculations.

Ethics
Ethics approval was obtained from the hospital trust ethics committee and subsequent approval from the University of Surrey Advisory Committee on Ethics. Research indemnity was obtained through the hospital trust. (See Appendix 2 for ethics committee and research and development correspondence).

Participants
Adult road traffic accident admissions to a major hospital were assessed over a 5-month period. Inclusion criteria were a) proficiency in English; aged 18-65 years old; assessment within 1 month of trauma. Exclusion criteria were: people not proficient in English (n=3); people unable to communicate verbally as a result of head injury; history of repeated admissions associated with alcoholism (n=3), or repeated head injury; patients with extended posttraumatic amnesia associated with severe head injury (n=4); patients with colour blindness, agnosia (unable to recognise words / colour), dyslexia; significant recent psychiatric history (n=3), and intravenous drug abuse (N=2). In total, 15 patients (9 male and 6 female) with a head injury and 13 patients (11 male and 2 female) with no head injury were included in the study. Assessments took place between 2 and 28 days post-trauma (median = 7, S= 6.80). The mean length of estimated posttraumatic amnesia for head injury participants was 19.63 hours (SD= 26.75) with a range of 1 minute to 90 hours. Of the 15 participants in the head injury group 3 had been drivers in their accidents, 1 had been a passenger, 5 had been motorbike riders, 4 had been pedestrians and 1 had been a cyclist. Of the 13 participants in the non-head injury group 2 had been drivers, 0 had been passengers, 7 had been motorbike riders, 3 had been pedestrians, and 1 had been a cyclist.
Matched orthopaedic and plastics admissions, based on age and gender were recruited as control participants. Inclusion criteria were: patients admitted to hospital as a result of a traumatic orthopaedic or plastics injury not as a result of a road traffic accident, and not involving head injury; aged 18-65; and proficiency in English. Exclusion criteria were: people not proficient in English (n=1); significant history of head injury or alcoholism; recent history of road traffic accident requiring medical treatment; colour blindness; dyslexia; and significant psychiatric history (n=2). In total 15 control patients (8 male and 7 female) were included in the study. Assessments took place between 2 and 25 days post-injury (median = 4, SD = 7.79).

Participants were also identified at follow-up outpatient appointments if they had already been discharged. 42 patients were assessed as inpatients and 1 patient was assessed whilst attending an outpatient appointment.

*Participant Characteristics*

*Descriptive data*

Descriptive statistics in relation to gender, ethnicity, occupation, years of education, previous psychiatric history, previous road traffic accident history, and previous head injury can be found in Tables 1 to 5.

*Table 1: Frequencies by sex*

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<th>Sex</th>
<th>RTA with head injury</th>
<th>RTA without head injury</th>
<th>Control</th>
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</thead>
<tbody>
<tr>
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<td>9</td>
<td>11</td>
<td>8</td>
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<tr>
<td>Female</td>
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<td>2</td>
<td>7</td>
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Table 2: Frequencies by ethnicity

<table>
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<th>RTA without head injury</th>
<th>Control</th>
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</thead>
<tbody>
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<td>7</td>
<td>10</td>
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<td>0</td>
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<td>White Other</td>
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</tr>
<tr>
<td>Asian or British</td>
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<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Asian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black or Black</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>British</td>
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</table>

Table 3: Frequencies by occupation level (Department of Employment, 1980)

<table>
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<th>Occupation</th>
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<th>RTA without head injury</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-manual</td>
<td>11</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Manual</td>
<td>4</td>
<td>7</td>
<td>6</td>
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</tbody>
</table>

Table 5: Frequencies of psychiatric history, previous RTA, and previous head injury

<table>
<thead>
<tr>
<th></th>
<th>RTA with head injury</th>
<th>RTA without head injury</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatric history</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Previous RTA</td>
<td>6</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Previous head injury</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Measures

Emotional Stroop tasks

The modified emotional Stroop task used words based on previous research. RTA words and matched neutral words (matched for syllables, word frequency in English language and word length) had been used by Bryant and Harvey (1995) and Harvey et al. (1996) in a computerised emotional Stroop task. RTA words had been developed from prior consultation with RTA patients (Harvey & Bryant, 1995). Words of a positive emotionality, and related to
OCD were obtained from previous emotional Stroop tasks (Bryant & Harvey, 1995; McNally et al., 1990) and were slightly adjusted to enable them to be matched by word frequency, length and syllables to the RTA and neutral words. Words related to hospitalisation following a head injury were suggested by professionals working in the area of PTSD and head injury. Words were matched for frequency, length and syllables. Word matching was achieved using Leech, Rayson, & Wilson (2001).

**Acute Stress Disorder Inventory (ASDI)**

The ASDI (Bryant et al., 1998) is a structured dichotomous scale that indexes the symptoms of ASD rather than requiring people to describe the symptoms, making it easy to administer in post-trauma situations (Bryant et al., 1998) (see Appendix 3). As well as obtaining a diagnostic decision, a total score of acute stress severity can be derived from individual item scores (0 = symptom absent, 1 = symptom present).

The ASDI has good internal consistency (r=.90); sensitivity in diagnosing ASD [percentage diagnosed by clinical interview with ASD and by ASDI (91%)]; and specificity [percentage not diagnosed with ASD by clinical interview and ASDI (93%)]. Test-retest reliability based on a sample of 60 trauma survivors is good (r=.88) over a period of 2 to 7 days, despite the fluctuating nature of symptoms (Bryant et al., 1998). 84% diagnosed with ASD using the ASDI on the first occasion also did on the second occasion and 94% not diagnosed with ASD at initial assessment were not diagnosed at second assessment.

**The State-Trait Anxiety Inventory (STAI)**

The STAI (Spielberger et al., 1983) was used to provide a measure of state and trait anxiety (see Appendix 4). This inventory consists of forty 4-point Likert items, with 20 items measuring state anxiety and 20 items measuring trait anxiety. Higher scores reflect greater state and trait anxiety. Test-retest reliability varies for state anxiety as would be expected (.16 to .62), but is more stable for trait anxiety from .65 to .75. (Spielberger et al., 1983).

**Stimulus materials**

Six types of Stroop words — practice words (*apple, cup, pencil, chimney, moustache, envelope*); neutral (*blanket, maintenance, sail, pause, game, garden*), positive (*lovely, worthy, praise, dearest, kindness, nice*); OCD related (*germs, filthy, faeces, dirty, contaminate, urine*), hospital related (*lights, mask, confused, amnesia, treatment, doctor*); and RTA related (*emergency, trapped, scream, smash, death, blood*) — were used in the colour naming task. Each type was presented 36 times and consisted of 6 words that were presented once each in 6
colours (red, black, green, blue, pink, and yellow). Words were printed by computer and
presented on individual A4 sheets of paper that were laminated. Font style was set to Times
New Roman at size 16 and colours were in bold type. There were six words to a line, with a
two-line gap in between. Word colours were chosen in a random order for each line, although
no colour was the same as the previous colour (McNally et al., 1990). See Appendix 5 for
Stroop cards.

Procedures
The modified emotional Stroop tasks were first piloted on 5 individuals of different ages,
gender and levels of education. Eyeballing of completion times did not suggest any obvious
differences in colour naming the different word categories. Participants reported no
noticeable difficulty with specific categories.

Participants for the study were identified through contact with nursing staff on inpatient wards
(orthopaedics, neurology / neurosurgery). Informed consent was obtained from the
participants following a complete description of the study. The whole assessment was
undertaken by the trainee clinical psychologist. Participants were assessed at their bedside,
due to orthopaedic or spinal injuries that often prevented mobility. Demographic information
was obtained from the medical notes and the patient (see Appendix 6). Psychiatric history
was determined from the medical notes and asking patients whether they had “ever seen a
psychiatrist, psychologist, or any other mental health professional before?” For patients with
a head injury, objective evidence for the head injury was sought from the medical notes, such
as loss of consciousness, or evidence of head impact. Posttraumatic amnesia was calculated
using the Galveston Orientation and Amnesia Test (GOAT, Levin, O’Donnell, & Grossman,
1979). Extent of posttraumatic amnesia was estimated by calculating the time from the
trauma to the onset of continuous memory reported by the patients (Gronwall & Wrightson,
1980). Additionally the GOAT was used to determine that patients with head injury were no
longer in posttraumatic amnesia. Patients with head injury were only involved in the study
when they were not in posttraumatic amnesia. This was based on a cut-off score on the
GOAT of 75 or above (Levin et al., 1979).

Patients were first administered the modified emotional Stroop tasks in the following order:
practice words, neutral words, positive words, OCD words, hospital words and RTA words.
RTA words were presented last, as it has been suggested that early presentation of trauma
words may result in continued interference with subsequent Stroop words (McNally et al.,
1990). Patients were given standardised instructions for the Stroop tasks. For the practice
Stroop patients were told: “I would like you to look at this page which shows words printed in different coloured inks. For example, do you see how this word (apple) is printed in black ink and this word (cup) is printed in red ink? I want you to name the colour of the ink that the words are printed in and not to read the word. So, what would you say for this one (pointing to the third word, correct any mistakes). Good. (Continue with two further practice items and correct any mistakes). Good. Now carry on until the end. When you finish this line go onto this line (show participant).” This involved the patient reading the lines form left to right and when reaching the end of the line starting the line below from the left.

Once it was established that the patient could manage the task, then the neutral word Stroop was presented with the instructions: “As before I want you to name the colour of the ink and not to read the word. Try to work as quickly as you can without making any mistakes or missing any out. Start here (point to first word on first line) and finish here (show sweeping left to right motion across lines and point to last word on last line). Ready? Go.” The experimenter used a stopwatch to record the time (in whole seconds) to complete each card. Colour naming errors were recorded, for example, participants reading the word or giving a different colour, due to possible errors occurring particularly in the head injury group. These instructions and recording of errors were based around the Interference subtest of the Delis-Kaplan Executive Functioning Systems (D-KEFS, Delis, Kaplan, & Kramer, 2001). Patients with head injury were then administered the ASDI. Dissociative amnesia was excluded as a possible symptom of ASD, because of the inability to recall aspects of the event due to amnesia associated with the head injury, or due to dissociation during the traumatic experience (Bryant & Harvey, 1999b). The STAI was then administered. Following the assessment, the patient was given a standard letter explaining that if they felt traumatised about the accident after leaving hospital to contact their GP (see Appendix 7). The procedure for RTA patients without a head injury and control participants was the same apart from the administration of the GOAT. RTA patients without a head injury and control patients were initially asked what their memories were of the event. This information was recorded, but was not used for analysis. This was done to be consistent in approach.
Analyses
Descriptive statistics were used to examine the characteristics of the sample. Where possible parametric statistics (ANOVA) were used to test for between and within group differences. Chi-square was used to compare group categorical data. Time since injury and time to colour name positive Stroop words had significant skewness and kurtosis (see Appendix 8). Therefore, a log transformation was applied when analysing participant characteristics and an inverse transformation was applied to colour naming times. Interference scores for the head injury group had significant skewness and kurtosis (see Appendix 8). Significant skewness and kurtosis remained despite recoding and transformation of the data. As a result, non-parametric statistics (Friedman test, Mann Whitney U, Wilcoxon and Kruskal Wallis) were used to test for differences between and within groups for interference on the Stroop tasks. Correlations were examined using Pearson’s Test, except for correlations concerning interference scores, where Spearman’s Rank Order Test was used.

Results

Recoding
Before all analyses, negatively reversed items for state and trait anxiety were recoded, so that higher scores indicated high anxiety for all items.

Participant Characteristics
Participant characteristics are presented in Table 6.
### Table 6: Participant characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>KIA without Head Injury</th>
<th>KIA with Head Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>0.23</td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td>mean age</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
</tr>
<tr>
<td>standard deviation</td>
<td>2.53</td>
<td>2.53</td>
<td>2.53</td>
</tr>
<tr>
<td>Time since accident</td>
<td>2.53</td>
<td>2.53</td>
<td>2.53</td>
</tr>
<tr>
<td>ASDI</td>
<td>2.53</td>
<td>2.53</td>
<td>2.53</td>
</tr>
<tr>
<td>Years of education</td>
<td>3.37</td>
<td>3.37</td>
<td>3.37</td>
</tr>
<tr>
<td>Age</td>
<td>2.53</td>
<td>2.53</td>
<td>2.53</td>
</tr>
</tbody>
</table>
As far as possible, participants in the three groups were matched for age, sex, years of education, and occupation. Statistical analyses were carried out to establish that there were no significant differences between the three groups for these variables. In addition, levels of ASD severity and state and trait anxiety for the three groups was included in the analysis.

A multivariate analysis of variance (MANOVA) indicated that there were no significant differences between the three groups for age, years of education, time since injury, ASD severity scores for criterion B, C, D, E, ASD severity total, or state and trait anxiety (F(20, 64) = 1.42, p = 0.15). Chi-square tests indicated that groups did not differ significantly in terms of sex (χ² (2, n=43) = 3.27, p = 0.20), or occupation (χ² (2, n=43) = 2.15, p = 0.34) (sec Tables 1 and 3 in Method section).

Emotional Stroop
Descriptive data for emotional Stroop completion times for each group and in each condition are presented in Table 7.
Table 7: Colour-naming completion times (in seconds) for the three groups.

<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTA without head injury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTA with head injury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>11.12</td>
<td>21</td>
<td>4.8</td>
<td>21.56</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>OCD</td>
<td>39.00</td>
<td>6.8</td>
<td>4.4</td>
<td>33.84</td>
<td>3.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Positive</td>
<td>36.80</td>
<td>6.2</td>
<td>4.1</td>
<td>29.02</td>
<td>7.0</td>
<td>4.9</td>
</tr>
<tr>
<td>Neutral</td>
<td>31.23</td>
<td>7.2</td>
<td>4.8</td>
<td>29.02</td>
<td>7.2</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Notes: M = mean, MD = median, SD = standard deviation.
A multivariate analysis of variance (MANOVA) was conducted to establish differences between the three groups for colour-naming times for neutral, positive, OCD, hospital, and RTA Stroop tasks. The MANOVA indicated that there were no significant differences in Stroop completion times across the three groups for neutral, positive, OCD, hospital, or RTA Stroop tasks \((F(10,74) = 1.38, p = 0.21)\).

Although errors in colour naming were monitored, very few errors were observed in the head injury and non-head injury groups and therefore no statistical comparison was made.

Interference

To investigate interference caused by trauma-related words, interference scores were calculated by subtracting the time to respond to the neutral words from the time to respond to the road traffic accident related words, positive words, OCD related words, and hospitalisation related words. For example, trauma related interference = time to colour name road traffic accident related Stroop words minus time to colour name neutral Stroop words.

Within comparisons (overall group)

Within comparisons of the overall groups were conducted to assess for differences between the four Stroop interference scores.

Table 8 shows the descriptive data for interference scores for word type.

<table>
<thead>
<tr>
<th>Interference</th>
<th>(M)</th>
<th>(Md)</th>
<th>(SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>-1.53</td>
<td>-1.00</td>
<td>4.40</td>
<td>-19 - 8</td>
</tr>
<tr>
<td>OCD</td>
<td>0.37</td>
<td>1.00</td>
<td>5.58</td>
<td>-15 - 12</td>
</tr>
<tr>
<td>Hospital</td>
<td>-1.47</td>
<td>-1.00</td>
<td>8.87</td>
<td>-42 - 19</td>
</tr>
<tr>
<td>RTA</td>
<td>1.72</td>
<td>2.00</td>
<td>9.15</td>
<td>-37 - 21</td>
</tr>
</tbody>
</table>

\(M = \text{mean}, \ Md = \text{median}, \ SD = \text{standard deviation}\)

A Friedman’s Test indicated that interference scores were significantly different for the four word types (positive, OCD, hospital, and road traffic accident) \(\chi^2 (3, N=43) = 22.55, p<0.001\) (see Appendix 10 for mean ranks).
A Wilcoxon Matched-Pairs Signed Ranks Test indicated that participants overall had significantly greater interference for RTA words than positive words ($z(43) = -2.99, p<0.01$, 2-tailed test) and hospitalisation words ($z(43) = -3.57, p<0.01$, 2-tailed test); and significantly greater interference was indicated for OCD words than positive words ($z(43) = -3.31, p<0.01$, 2-tailed test) and hospitalisation words ($z(43) = -2.21, p<0.05$, 2-tailed test).

There were no significant differences between positive interference and hospital interference ($z(43) = -0.55, p = 0.58$, 2-tailed test), and between OCD interference and RTA interference ($z(43) = -1.55, p = 0.12$, 2-tailed test).

**Within comparisons of individual groups**

Within comparisons of individual groups were conducted to assess for differences between the four Stroop interference scores, within each group. Table 9. shows the descriptive data for interference scores for positive, OCD, hospital, and RTA words for the three groups.
Table 9: Interference scores for emotional Stroop words for the three groups

<table>
<thead>
<tr>
<th>Word Type</th>
<th>Control</th>
<th>RTA without Head Injury</th>
<th>RTA with Head Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>MD</td>
<td>SD</td>
</tr>
<tr>
<td>RITA interference</td>
<td>4.40</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Hospital interference</td>
<td>0.13</td>
<td>3.00</td>
<td>1.00</td>
</tr>
<tr>
<td>OCD interference</td>
<td>0.73</td>
<td>1.00</td>
<td>5.92</td>
</tr>
<tr>
<td>Positive interference</td>
<td>0.73</td>
<td>1.00</td>
<td>5.92</td>
</tr>
</tbody>
</table>

Note: MD = mean, SD = standard deviation
**RTA with head injury group**
A Friedman’s Test indicated that there was a significant difference between interference scores in the RTA with head injury group ($\chi^2 (3, N=15) = 10.11, p<0.05$) (see Appendix 10 for mean ranks).

A Wilcoxon Matched-Pairs Signed Ranks Test indicated that participants had significantly greater interference for RTA words than positive words ($z(15) = -2.21, p<0.05, 2$-tailed test) and hospitalisation words ($z(15) = -2.23, p<0.05$); and significantly greater interference was indicated for OCD words than positive words ($z(15) = -2.04, p<0.05, 2$-tailed test).

There were no significant differences between positive interference and hospitalisation interference ($z(15) = -0.46, p = 0.65, 2$-tailed test), hospitalisation interference and OCD interference ($z(15) = -0.57, p = 0.57, 2$-tailed test), and RTA interference and OCD interference ($z(15) = -1.35, p = 0.17, 2$-tailed test).

**RTA without head injury group.**
A Friedman’s Test indicated that there was a significant difference between interference scores in the RTA without head injury group ($\chi^2 (3, N=13) = 15.05, p<0.01$) (see Appendix 10 for mean ranks).

A Wilcoxon Matched-Pairs Signed Ranks Test indicated that participants had significantly greater interference for RTA words than positive words ($z(13) = -2.35, p<0.05, 2$-tailed test), and hospitalisation interference words ($z(13) = -2.21, p<0.05, 2$-tailed test); significantly greater interference was indicated for OCD words than positive words ($z(13) = -2.51, p<0.05, 2$-tailed test), and hospitalisation words ($z(13) = -2.21, p<0.05, 2$-tailed test).

There were no significant differences between interference for positive words and hospitalisation words ($z(13) = -1.20, p = 0.23, 2$-tailed test), and for RTA words and OCD words ($z(13) = -1.50, p = 0.14, 2$-tailed test).

**Control group**
A Friedman’s Test indicated that there were no significant differences between interference scores in the control group ($\chi^2 (3, N=15) = 2.94, p = 0.40$).
Between group comparisons

A Kruskall-Wallis Test was conducted to establish whether there were any significant differences for interference scores between the three groups. The Kruskall-Wallis Test indicated that road traffic accident interference scores were significantly different across the three groups ($\chi^2 = 2, N=43) = 7.85, p<0.05)$. There were no significant differences across the three groups for positive interference ($\chi^2 = 2, N=43) = 3.59, p = 0.17$), OCD interference ($\chi^2 = 2, N=43) = 1.27, p = 0.53$), or hospital interference ($\chi^2 = 2, N=43) = 4.83, p = 0.09$) (see Appendix 10 for mean ranks).

A Mann-Whitney U Test indicated that road traffic accident interference scores were significantly higher for the RTA with head injury group than for controls ($z(15,15) = 50.00, p<0.01, 2$-tailed test).

Relationship between Stroop interference, acute stress disorder and anxiety

Combined groups

The correlation between Stroop interference, severity of ASD symptoms, and state and trait anxiety for all three groups combined were examined using a Spearman's Rank Order Test, which is presented in Table 10.

Table 10: Correlations between interference on Stroop tasks, severity of ASD symptoms and state and trait anxiety

<table>
<thead>
<tr>
<th></th>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experience)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>Severity total</th>
<th>State anxiety</th>
<th>Trait anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive interference</td>
<td>0.18</td>
<td>0.13</td>
<td>0.11</td>
<td>0.18</td>
<td>0.22</td>
<td>0.18</td>
<td>0.09</td>
</tr>
<tr>
<td>OCD interference</td>
<td>0.05</td>
<td>0.03</td>
<td>0.02</td>
<td>0.00</td>
<td>0.05</td>
<td>0.07</td>
<td>0.08</td>
</tr>
<tr>
<td>Hospital interference</td>
<td>0.27</td>
<td>0.02</td>
<td>0.10</td>
<td>0.13</td>
<td>0.18</td>
<td>0.12</td>
<td>0.09</td>
</tr>
<tr>
<td>RTA interference</td>
<td>0.12</td>
<td>0.04</td>
<td>0.14</td>
<td>0.11</td>
<td>0.15</td>
<td>0.01</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Significance * $p<0.05$

** $p<0.01$
Spearmans' Rank Order Tests indicated that there were no significant correlations between interference (positive, OCD, hospital, and RTA) and ASD severity scores, or state and trait anxiety.

**Individual groups**
Spearmans' Rank Order Tests were used to examine the association between interference scores, ASD symptoms and state and trait anxiety within each group separately.

**RTA with head injury group**
Spearmans' Rank Order Test correlations for interference scores, severity of ASD symptoms, and state and trait anxiety for the RTA with head injury group alone are shown in Table 11.

**Table 11. Correlations between interference scores, ASD symptoms, and state and trait anxiety for the RTA with head injury group.**

<table>
<thead>
<tr>
<th></th>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experience)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>total</th>
<th>State anxiety</th>
<th>Trait anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive interference</td>
<td>0.14</td>
<td>0.25</td>
<td>0.32</td>
<td>0.24</td>
<td>0.30</td>
<td>0.16</td>
<td>0.23</td>
</tr>
<tr>
<td>OCD interference</td>
<td>0.05</td>
<td>0.25</td>
<td>-0.06</td>
<td>0.04</td>
<td>-0.05</td>
<td>-0.02</td>
<td>0.24</td>
</tr>
<tr>
<td>Hospital interference</td>
<td>0.31</td>
<td>-0.05</td>
<td>0.25</td>
<td>0.17</td>
<td>0.25</td>
<td>0.08</td>
<td>0.14</td>
</tr>
<tr>
<td>RTA interference</td>
<td>0.03</td>
<td>0.06</td>
<td>0.36</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.27</td>
<td>-0.29</td>
</tr>
</tbody>
</table>

Significance  
* p< 0.05  
** p< 0.01

A Spearman’s Rank Order Test indicated that there were no significant correlations between interference (positive, OCD, hospital, and RTA) and ASD severity scores, or state and trait anxiety for the RTA with head injury group.

**RTA without head injury group**
Spearmans' Rank Order Test correlations for interference scores, severity of ASD symptoms, and state and trait anxiety for the RTA without head injury group alone are shown in Table 12.
Table 12. Correlations between interference scores, ASD symptoms, and state and trait anxiety for the RTA without head injury group.

<table>
<thead>
<tr>
<th></th>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experience)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>Severity total</th>
<th>State anxiety</th>
<th>Trait anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive interference</td>
<td>0.37</td>
<td>0.28</td>
<td>0.01</td>
<td>0.31</td>
<td>0.44</td>
<td>0.45</td>
<td>0.22</td>
</tr>
<tr>
<td>OCD interference</td>
<td>0.20</td>
<td>0.33</td>
<td>0.16</td>
<td>0.17</td>
<td>0.38</td>
<td>0.28</td>
<td>0.08</td>
</tr>
<tr>
<td>Hospital interference</td>
<td>0.32</td>
<td>0.13</td>
<td>0.12</td>
<td>0.38</td>
<td>0.37</td>
<td>0.27</td>
<td>0.33</td>
</tr>
<tr>
<td>RTA interference</td>
<td>-0.13</td>
<td>0.18</td>
<td>0.16</td>
<td>0.08</td>
<td>0.14</td>
<td>-0.01</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Significance: * p< 0.05  ** p< 0.01

A Spearman’s Rank Order Test indicated that there were no significant correlations between interference (positive, OCD, hospital, and RTA) and ASD severity scores, or state and trait anxiety for the RTA without head injury group.

**Control group**

Spearman’s Rank Order Test correlations for interference scores, severity of ASD symptoms, and state and trait anxiety for the control group alone are shown in Table 13.
Table 13. Correlations between interference scores, ASD symptoms, and state and trait anxiety for the control group.

<table>
<thead>
<tr>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experience)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>Severity total</th>
<th>State anxiety</th>
<th>Trait anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive interference</td>
<td>0.07</td>
<td>-0.02</td>
<td>0.05</td>
<td>0.08</td>
<td>0.15</td>
<td>-0.10</td>
</tr>
<tr>
<td>OCD interference</td>
<td>-0.20</td>
<td>-0.24</td>
<td>-0.16</td>
<td>-0.28</td>
<td>-0.16</td>
<td>-0.03</td>
</tr>
<tr>
<td>Hospital interference</td>
<td>-0.10</td>
<td>-0.38</td>
<td>-0.40</td>
<td>-0.17</td>
<td>-0.11</td>
<td>-0.04</td>
</tr>
<tr>
<td>RTA interference</td>
<td>-0.01</td>
<td>-0.27</td>
<td>-0.42</td>
<td>-0.30</td>
<td>-0.15</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

Significance
* p< 0.05
** p< 0.01

A Spearman’s Rank Order Test indicated that there were no significant correlations between interference (positive, OCD, hospital, and RTA) and ASD severity scores, or state and trait anxiety for the control group.

Relationship between severity of acute stress disorder symptoms and anxiety

Pearson's Tests were conducted to examine the relationship between severity of Acute Stress Disorder symptoms and state and trait anxiety for the combined group and also for each group alone.

Table 14. shows the Pearson's Test correlations for ASD severity scores and state and trait anxiety for the combined groups.

Table 14: Correlations between ASD severity scores and state and trait anxiety for combined groups

<table>
<thead>
<tr>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experience)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>Severity total</th>
<th>State anxiety</th>
<th>Trait anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>State anxiety</td>
<td>0.62***</td>
<td>0.70***</td>
<td>-0.38*</td>
<td>0.56***</td>
<td>0.74***</td>
<td></td>
</tr>
<tr>
<td>Trait anxiety</td>
<td>0.25</td>
<td>0.12</td>
<td>-0.17</td>
<td>0.38*</td>
<td>0.31*</td>
<td></td>
</tr>
</tbody>
</table>

Significance
* p< 0.05
** p< 0.01
*** p< 0.001
**Combined groups**

**State Anxiety**

Pearson's Tests indicated that there was a significant positive correlation between state anxiety and criterion B (dissociation) severity \( (r(43) = 0.62, p<0.001) \), criterion C (re-experiencing) severity \( (r(43) = 0.70, p<0.001) \), criterion E (arousal) severity \( (r(43) = 0.56, p<0.001) \), and total severity score \( (r(43) = 0.74, p<0.001) \).

A Pearson's Test indicated that there was a significant negative correlation between state anxiety and criterion D (avoidance) severity \( (r(43) = -0.38, p<0.05) \).

**Trait anxiety**

Pearson's Tests indicated that there was a significant positive correlation between trait anxiety and criterion E (arousal) severity \( (r(43) = 0.38, p<0.05) \), and severity total \( (r(43) = 0.31, p<0.05) \).

There was no significant correlation between trait anxiety and criterion B (dissociation) severity \( (r(43) = 0.25, p = 0.10) \), criterion C (re-experiencing) severity \( (r(43) = 0.12, p = 0.46) \), and criterion D (avoidance) severity \( (r(43) = -0.17, p = 0.29) \).

**RTA with head injury group**

Correlations between ASD severity scores and state and trait anxiety for the head injury group alone are shown in Table 15 for the RTA with head injury group.

<table>
<thead>
<tr>
<th></th>
<th>Severity B</th>
<th>Severity C</th>
<th>Severity D</th>
<th>Severity E</th>
<th>Severity total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(dissociation)</td>
<td>(re-experience)</td>
<td>(avoidance)</td>
<td>(arousal)</td>
<td>total</td>
</tr>
<tr>
<td>State anxiety</td>
<td>0.67**</td>
<td>0.78**</td>
<td>0.47</td>
<td>0.41</td>
<td>0.67**</td>
</tr>
<tr>
<td>Trait anxiety</td>
<td>0.25</td>
<td>0.13</td>
<td>0.15</td>
<td>0.05</td>
<td>0.08</td>
</tr>
</tbody>
</table>

**Significance**

* * p<0.05
** ** p<0.01
**State anxiety**

A Pearson's Test indicated that there was a significant positive correlation between state anxiety and criterion B (dissociation) severity \( (r(43) = 0.67, p<0.01) \), criterion C (re-experiencing) severity \( (r(43) = 0.78, p<0.01) \), and total severity score \( (r(43) = 0.67, p<0.01) \). There was no significant correlation between state anxiety and criterion D (avoidance) \( (r(43) = 0.47, p = 0.08) \), criterion E (arousal) severity \( (r(43) = 0.56, p = 0.13) \).

**Trait anxiety**

A Pearson's Test indicated that there was no significant correlation for trait anxiety and criterion B (dissociation) severity \( (r(43) = 0.25, p = 0.38) \), criterion C (re-experiencing) severity \( (r(43) = 0.13, p = 0.63) \), criterion D (avoidance) \( (r(43) = 0.15, p = 0.61) \), criterion E (arousal) severity \( (r(43) = 0.05, p = 0.87) \), and total severity score \( (r(43) = 0.09, p = 0.76) \).

**RTA without head injury group**

Correlations between ASD severity scores and state and trait anxiety for the RTA without head injury group alone are shown in Table 16.

**Table 16: Correlations between state and trait anxiety and ASD severity scores for the RTA without head injury group.**

<table>
<thead>
<tr>
<th></th>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experience)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>Severity total</th>
</tr>
</thead>
<tbody>
<tr>
<td>State anxiety</td>
<td>0.51</td>
<td>0.65*</td>
<td>-0.15</td>
<td>0.40</td>
<td>0.60*</td>
</tr>
<tr>
<td>Trait anxiety</td>
<td>0.03</td>
<td>-0.36</td>
<td>-0.11</td>
<td>0.54</td>
<td>-0.04</td>
</tr>
</tbody>
</table>

**Significance**

* \( p<0.05 \)

**State anxiety**

A Pearson's Test indicated that there was a significant positive correlation between state anxiety and criterion C (re-experiencing) severity \( (r(43) = 0.65, p<0.05) \), and total severity score \( (r(43) = 0.60, p<0.05) \).

There was no significant correlation between state anxiety and criterion B (dissociation) severity \( (r(43) = 0.51, p = 0.07) \), criterion D (avoidance) \( (r(43) = -0.15, p = 0.62) \), and criterion E (arousal) severity \( (r(43) = 0.40, p = 0.18) \).
**Trait anxiety**

A Pearson’s Test indicated that there was no significant correlation for trait anxiety and criterion B (dissociation) severity ($r(43) = 0.03, p = 0.92$), criterion C (re-experiencing) severity ($r(43) = -0.38, p = 0.23$), criterion D (avoidance) ($r(43) = -0.11, p = 0.73$), criterion E (arousal) severity ($r(43) = 0.54, p = 0.06$), and total severity score ($r(43) = -0.04, p = 0.90$).

**Control group**

Correlations between ASD severity scores and state and trait anxiety for the control group alone are shown in Table 17.

**Table 17: Correlations between state and trait anxiety and ASD severity scores for the control group.**

<table>
<thead>
<tr>
<th></th>
<th>Severity B (dissociation)</th>
<th>Severity C (re-experiencing)</th>
<th>Severity D (avoidance)</th>
<th>Severity E (arousal)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>State anxiety</td>
<td><strong>0.59</strong>*</td>
<td><strong>0.76</strong>*</td>
<td>0.50</td>
<td><strong>0.64</strong>*</td>
<td><strong>0.79</strong>**</td>
</tr>
<tr>
<td>Trait anxiety</td>
<td>0.38</td>
<td><strong>0.59</strong>*</td>
<td>0.49</td>
<td><strong>0.61</strong>*</td>
<td><strong>0.64</strong>**</td>
</tr>
</tbody>
</table>

Significance  
* $p< 0.05$
** $p< 0.01$

**State anxiety**

A Pearson’s Test indicated that there was a significant positive correlation between state anxiety and criterion B (dissociation) severity ($r(43) = 0.59, p<0.05$), criterion C (re-experiencing) severity ($r(43) = 0.76, p<0.05$), criterion E (arousal) severity ($r(43) = 0.64, p<0.05$), and total severity score ($r(43) = 0.79, p<0.01$).

There was no significant correlation between state anxiety and criterion D (avoidance) ($r(43) = 0.50, p = 0.06$).

**Trait anxiety**

A Pearson’s Test indicated that there was a significant positive correlation between trait anxiety and criterion C (re-experiencing) severity ($r(43) = 0.59, p<0.05$), criterion E (arousal) severity ($r(43) = 0.61, p<0.05$), and total severity score ($r(43) = 0.64, p<0.01$).
A Pearson's Test indicated that there was no significant correlation for trait anxiety and criterion B (dissociation) severity ($r(43) = 0.38, p = 0.17$), and criterion D (avoidance) ($r(43) = 0.49, p = 0.06$).

**Qualitative information**
During the course of the study information was reported by participants that was of clinical and theoretical interest. Information from both the RTA with a head injury and RTA without a head injury group is recorded in this section.

**RTA with head injury group**
Two patients in the RTA with a head injury group reported very brief memories of the road traffic accident. One female patient recalled briefly screaming at her boyfriend shortly after the accident and then remembered nothing until two hours later in hospital. A male patient reported having a single memory of a drop of blood dripping down his motor bike helmet and no other recall of the accident. He experienced intrusive images of this isolated memory. A further male patient reported no explicit recall of his motorbike accident. He had retrograde amnesia for approximately one minute and posttraumatic amnesia for approximately 30 minutes. However, he reported that he had been shown a map of the place where he had his accident by his wife. He said that he had a sudden feeling of extreme tiredness come over him, that he could not explain and felt very surprised at.

**RTA without head injury group**
Two patients reported that sensation of pain related to their orthopaedic injuries served as a trigger for intrusive thoughts and images of their accident.
Discussio

Although early research suggested mutual exclusivity of ASD / PTSD and head injury (Mayou et al., 1993; Sbordne & Liter, 1995; Warden et al., 1997), recent research has suggested that ASD / PTSD may co-exist with head injury (Bryant, 2001a; Bryant & Harvey, 1999; Feinstein et al., 2002; Turnbull et al., 2001; Wright & Telford, 1996), although its presentation may be more at the level of emotional and physiological reactivity (Bryant et al., 1996; Turnbull et al., 2001), rather than at the level of conscious re-experiencing in the form of thoughts and flashbacks. This suggests that implicit memory traces for the trauma may exist, despite a lack of explicit recall for the event. Implicit memory for the event, involving systems such as the amygdala (LeDoux, 1995) has been implicated as one possible mechanism in the development of ASD / PTSD with head injury (Bryant, 2001b). However, this hypothesis has not been empirically tested in the head injury population.

The emotional Stroop paradigm has been commonly used as an implicit measure of posttraumatic stress, in rape victims (Cassiday et al., 1992), Vietnam veterans (McNally et al., 1990), victims of ferry disaster (Thrasher et al., 1994) and road traffic accident victims (Bryant & Harvey, 1995; Harvey et al., 1996). It has not previously been investigated with patients who have sustained a head injury.

In this study, the intention was to utilise the emotional Stroop paradigm in the head injury population, to investigate the existence of implicit memory for a road traffic accident and its relationship with explicit self-report measures of trauma and anxiety. Three groups of patients were compared on Stroop performance: patients involved in a road traffic accident who had sustained a head injury; patients involved in a road traffic accident who had not sustained a head injury, and a control group of patients admitted to hospital through events not related to a road traffic accident.

Findings

Hypothesis 1

The first hypothesis that RTA patients with a head injury would take significantly longer to colour name Stroop words than RTA patients without a head injury, or controls was unsupported. However, previous studies have failed to find significant differences between patients with and without a head injury on the original Stroop (Van Zomeran & Brower, 1987). It has been argued that it is not sufficiently challenging in its original form to detect cognitive impairment (Bohnen et al., 1992).
Hypothesis 2

Consistent with the second hypothesis, patients with a head injury demonstrated a significant interference effect for words related to a road traffic accident, as well as patients without a head injury. This study suggests that it is even possible for patients with reduced explicit recall for an event, in this case a road traffic accident, to show an interference effect for trauma-related words. Previous research has demonstrated that the emotional Stroop paradigm operates at an implicit and not just explicit level (Bryant & Harvey, 1995). It is therefore possible that interference in the head injury group for road traffic accident words may represent implicit memory for the accident. Additional qualitative evidence for implicit memory traces of trauma also came from the reporting of one patient who had no recall of his accident, post traumatic amnesia for approximately 30 minutes and retrograde amnesia for approximately one minute before the accident. He reported suddenly feeling lethargic immediately after being shown by his wife the point on a map where his accident occurred. He was puzzled by the nature and speed of his body’s reaction to the stimulus. Experimental evidence already exists for intact implicit memory in the form of procedural memory in patients with posttraumatic amnesia (Cohen & Squire, 1980). Furthermore, Nissen, Knopman, and Schacter (1987) have demonstrated that inducing posttraumatic amnesia with the use of an acetylcholine inhibitor (scopolamine) has induced explicit declarative memory deficits in normal volunteers, but not implicit memory deficits, such as procedural memory. This study may suggest evidence for implicit memory for trauma in head injury.

Emotionality hypothesis

Previous research in the non-head injury population has suggested that the Stroop interference effect may not be threat-specific and may be more related to word emotionality. The finding that both the road traffic accident groups had significantly more interference for road traffic accident related words than words of a positive emotionality, goes against the emotionality hypothesis that that Stroop interference might be more reflected in the emotionality of the words, rather than their threat-related content (Martin et al., 1991). This finding supports the second hypothesis and previous research (Bryant & Harvey, 1995; McNally et al., 1990). However, in this study, it is less conclusive that the threat-content is specific, as both road traffic accident groups did not differ significantly on interference for road traffic accident words from interference with OCD related words. Furthermore, OCD interference was significantly different from positive interference and hospitalisation interference. Nevertheless, this failure to significantly differentiate OCD and RTA interference may have been due to low levels of clinical psychopathology amongst the participants. Only one person in the study met full criteria for Acute Stress Disorder and only 5 people met subsyndromal
criteria (all criteria apart from one). However, previous research failed to find significant interference for OCD words in Vietnam veterans who did not meet diagnostic criteria for PTSD (McNally et al., 1990). The question therefore remains whether the OCD words (germs, contamination, urine, faeces, dirty, filthy) were similarly threatening to RTA patients, as much as RTA related words (emergency, smash, death, scream, trapped, bang).

There are several possible explanations for these findings. It could be argued that the nature of the OCD words might be associated with particular elements of the traumatic situation, for example, incontinence (faeces, urine) as a bodily reaction to a fearful situation, or resulting from loss of consciousness. Therefore, these words might be associated with the actual accident scene. Levels of dependency on hospital staff for removal of bodily fluids may also have been more of a problem for RTA patients who tended to be less physically mobile than orthopaedic controls. Obsessive tendencies could additionally be interpreted as a way of gaining control over a situation that has been uncontrollable, such as a road traffic accident. Assumptions about responsibility and harm are also commonly observed in OCD (Salkovskis, Wroe, Gledhill, Morrison, Forrester, Richards, Reynolds, & Thorpe, 2000). It is possible that particularly for patients who have been involved in a RTA accident that they may be preoccupied about responsibility for the accident, for example why did it happen to them. Obsessive-compulsive symptoms have been described to follow head injury, in susceptible individuals. Usually the patient is ruminative and tense and focusing their doubts, preoccupation, concerns, on their head injury (Andersen, 1942). Measuring levels of obsessionality both for the time preceding and post-accident would have been a useful comparison. Of course, it could be argued that it is the negative emotionality of the words that causes the interference rather than the threat specific nature. It would have been interesting to see whether words related to another anxiety disorder would have had a similar effect.

**Hospitalisation**

In addition, no significant interference was observed for words associated with hospitalisation for the RTA groups with and without a head injury, suggesting that this was not a significant factor in this sample of patients. This hypothesis has not been formally investigated in patients with a head injury, although previous research has found that patients without a head injury can have PTSD symptomatology associated with memories of intensive care (Jones et al., 2001). However, hospitalisation words used in this study were based on words associated with memory for the admission and the head injury (lights, mask, amnesia, confusion, doctor, treatment), rather than delusional memories of intensive care reported by Jones et al., (2001),
such as believing someone was trying to kill you (medical team providing treatment). The finding that the control group of hospital patients also showed no significant interference for hospitalisation words, despite being as anxious as the road traffic accident groups would also seem to refute the hospitalisation hypothesis. Previous research using the Stroop paradigm with RTA patients has not used a hospital control. For example, Harvey et al. (1996) used undergraduate students for a control group and Bryant and Harvey (1995) only used road traffic accident patients.

**Hypothesis 3**
The results of the control group would seem to go against the general emotionality hypothesis. There were no significant differences in interference scores for positive, OCD, hospital, or road traffic accident related words in the control group. Patients in the control group had been admitted as emergency cases as a result of injuries not related to a road traffic accident and did not differ significantly in terms of severity of Acute Stress Disorder symptoms, or state or trait anxiety from the two RTA groups. This suggests that interference for threat-related words was not generically related to anxiety, but to the nature of the trauma itself.

**Hypotheses 4 and 5**
Research into the head injury population has also suggested that the ASD / PTSD profile may differ from the non-head injury population, with trauma being expressed more at the level of emotional and physiological reactivity, such as the arousal criterion and state anxiety. The findings of no correlations at all for ASD severity scores and state anxiety also meant that there was no support for the hypothesis that interference scores in the head injury group would be correlated with ASD arousal severity scores and state anxiety. There were also no significant correlations between interference, ASD severity scores and state and trait anxiety in the non-head injury group and control group. Previous research with the non-head injury population has found correlations between self-report measures for PTSD and interference scores. For example, Cassiday et al. (1992) in a study of rape victims with PTSD found that high threat words were significantly associated with self-reported intrusive symptoms, but not with self-reported avoidance and numbing symptoms. Studies have identified additional influences of trait anxiety on interference. For example, MacLeod and Rutherford (1992) found higher levels of interference for threat words in normal participants with high trait anxiety. Trait anxiety has also been found to have some effect on performance on the original Stroop paradigm (Batchelor et al., 1992) in patients with and without a head injury. There was no support for these findings in this study.
Low levels of ASD severity, with few people meeting diagnostic criteria for Acute Stress Disorder prevented an adequate analysis of the relationship between Stroop interference, ASD severity and state and trait anxiety. Previous research has only found significant interference for trauma related words in groups with PTSD, and not in control groups without PTSD (for example, McNally et al., 1990; Harvey & Bryant, 1995). Importantly, existing studies have not investigated Stroop interference in the acute stages of ASD. It is unclear whether this lack of association actually reflects a lack of consistency between implicit and explicit measures of trauma in the acute stages. Comparison of initial acute interference scores with interference in the post-acute phase would be useful to examine this further. The contribution of the environment to ratings of Acute Stress Disorder symptoms is also uncertain. It could be argued that the hospital environment could be a protective environment for patients, sheltering them from exposure to stimuli associated with the trauma, in other words, traffic, and it is only on exposure to traumatic stimuli, for example trauma-related Stroop words that an effect is seen.

**Hypothesis 6**

However, there were significant correlations between severity of ASD symptoms and state and trait anxiety, in support of hypothesis six and previous research into the development of the Acute Stress Disorder Interview (ASDI) used in this study (Bryant et al., 1998). Interestingly, ASD severity scores for dissociation, re-experiencing, arousal, and total severity score had significant positive correlations with state anxiety overall, whereas avoidance had a significant negative correlation, suggesting that those people who were more avoidant were less anxious. Trait anxiety was significantly associated with re-experiencing, arousal, and total severity scores for ASD in the control group, although there were no such correlations in the two experimental road traffic accident groups.

**Conclusion**

In conclusion, there is some suggestive evidence for the existence of implicit memory for trauma in patients with head injury who lack explicit recall for the event: as implicated by interference for trauma-related words. However, the additional significant interference for OCD words confuses the picture, for example whether OCD and RTA interference is due to the negative emotionality of the words, or that OCD words are also central to the road traffic accident scene, or thoughts of responsibility related to the traumatic event. Therefore, the role of implicit memory for trauma in the development of ASD / PTSD remains unclear from this study.
Clinical implications
Suggesting even slight support for the existence of implicit memory for trauma, despite amnesia for the event has important clinical implications. Greater acceptance of the possible co-existence of ASD / PTSD and head injury would lead to enhanced awareness and assessment in the acute phase. Subsequent early intervention to prevent chronic development of PTSD, particularly in mild cases of head injury would be a beneficial outcome. Indeed, Harvey, Brewin, Jones, and Kopelman (2003) suggest that assessment for ASD and PTSD should be routine post head injury.

Treatment for ASD / PTSD in head injury
One early intervention study has already suggested some efficacy of this approach. Bryant, Harvey, Dang, Sackville, and Basten (1998) provided five sessions of either cognitive behaviour therapy (CBT) or supportive counselling to civilian trauma survivors who met criteria for ASD. CBT involved cognitive therapy, prolonged imaginal exposure, and anxiety management, whereas supportive counselling involved nondirective counselling and general problem solving. The study found that 17% of the CBT group and 67% of the supportive counselling group met criteria for PTSD 6-months later.

Recognition of the role of ASD / PTSD in the interaction with physiological results of head injury has important implications for the rehabilitation of patients with head injury. The increased risk of psychiatric diagnosis in the head injury population, such as depression is well established (Deb, Lyons, Koutzoukis, Ali, & McCarthy, 1999). However, the interaction of psychological trauma and cognitive deficits appears equally important. In particular, there appears to be a significant overlap between symptoms of PTSD and post-concussional syndrome not only diagnostically, but also clinically. Post-concussional syndrome is now considered to involve a combination of organic, psychological and social factors (Fenton et al., 1993). Furthermore, Bryant and Harvey (1999a) found that patients with mild head injury and PTSD were more likely to report post-concussional symptoms that those patients without PTSD. Therefore, treatment for PTSD symptoms may have therapeutic benefit for patients with persistent post-concussional syndrome. In addition, therapeutic interventions for PTSD may have a significant impact on behaviour post head injury. For example, McNeil and Greenwood (1996) describe a patient who sustained a severe head injury in a RTA, who presented with irritability and problems of reduced anger control. This was originally attributed to the effects of the head injury. Further examination revealed that he avoided talking about the accident, became anxious when asked directly about the accident, and had
nightly nightmares. Following treatment for PTSD, behaviour problems, which were attributed solely to the head injury reduced.

**Monitoring treatment**

The Stroop task may also have direct clinical benefit. Previous research has used it to monitor the effects of treatment. Foa, Feske, Murdock, Kozak, and McCarthy (1991) found that an interference effect for rape related words in patients with PTSD disappeared following successful treatment with CBT. Theoretically, this would suggest that once an explicit coherent processed memory for the trauma is formed, then this inhibits triggering of implicit memory for the trauma. In the same way implicit interference triggered by trauma-related stimuli on the Stroop is also inhibited.

**Medico-legal applications**

The Stroop task may also prove useful in medico-legal work, being less open to manipulation than self-report measures. It is likely that people will find it harder to fake responses on the Stroop than to falsely report symptoms. Indeed, Burges and McMillan (2001) demonstrated that when using a symptom checklist alone, 94% of naive participants meet diagnostic criteria for PTSD, probably through guessing. Recently, Buckley, Galovski, Blanchard, and Hickling (2003) have demonstrated that even professional actors given coaching about PTSD fail to mimic performance on an emotional Stroop that is observed in clinical PTSD patients.

**Use in other populations**

Given the significant results in the present study, the emotional Stroop may also be an effective implicit measure of trauma in other populations, such as people who believe they have been victims of childhood sexual abuse, but do not have any memories of the event.

**Critique**

**Positive aspects**

This study has several positive aspects that previous research in ASD / PTSD and head injury have not had. Including only patients with supportive documentation of head injury from the accounts of the medical professionals at the site of the accident, such as physical injury to the head, evidence of impact of the head, or loss of consciousness is one example. The nature of the neurological trauma was also specific to closed head injury sustained in a road traffic accident, and did not include people with mixed aetiologies, such as vascular, or anoxic events. Psychological trauma was also specific for the head injury group, by not including
patients with closed head injury through other traumatic experiences, for example, physical assault.

However, there are also several negative aspects to the study.

**Cross-sectional design**

Due to the limited time available and anticipated difficulty in following patients up after discharge from hospital, the present study was resigned to being cross-sectional rather than longitudinal in nature. A longitudinal design would have allowed detailed examination of the relationship between initial interference scores for road traffic accident patients with and without a head injury, with interference scores when discharged. The lack of longitudinal data means that the predictive validity of interference for trauma-related words is unknown. Follow-up would also have helped to further investigate the significant interference for OCD words in the RTA group, for example whether OCD interference remained in the post-acute stage on discharge from hospital. A longitudinal study would also have examined the relationship with self-report measures of trauma and anxiety, to see whether there is any relationship between these measures and interference scores once patients leave the secure environment of the hospital. In particular, in light of these results, do interference scores predict chronic functioning in terms of PTSD severity, despite having no relationship with ASD severity?

**Sample**

There are several criticisms about the sampling of the data. For example, a larger sample size may have led to a more normal distribution of interference scores, thereby allowing more powerful examination of the data with parametric analysis. The head injury sample was also not restricted to one severity level of head injury, for example mild head injury. Only patients with a head injury severe enough to have prolonged post-traumatic amnesia were excluded from the study. In addition, unlike the experimental groups who were restricted to patients who had been involved in a road traffic accident, the control group consisted of patients who had been admitted through multiple aetiologies, to allow for sufficient suitably matched participants. Lastly, only a small number of patients met full or subsyndromal criteria for ASD, which has left some ambiguity about the significance of the interference for trauma related words in the two road traffic accident groups, and the additional significant interference for OCD words. Future investigations of patients with a head injury should focus on larger groups of patients with a diagnosis of ASD to compare against patients with a head injury who do not meet diagnostic criteria for ASD.
Presentation of Stroop tasks

There can be several criticisms of the results obtained with the head injury group. In repeated measure designs, it is normal to alter the order of item presentation for different participants to prevent order effects. In this study, the different Stroop tasks were presented in identical order to patients (practice, neutral, positive, OCD, hospital, RTA). This change from normal procedures was based on previous research (McNally et al., 1990) that kept the presentation of Stroop tasks consistent, due to concerns raised by pilot participants that early presentation of trauma-related words interfered with the presentation of subsequent Stroop categories, because they could not stop thinking about the trauma-related words. One possible argument in this study is that the head injury group showed greater interference on the RTA Stroop task, due to the effects of cognitive fatigue, thereby taking longer on each Stroop task following the neutral words. However, the profile of RTA patients in the head injury group was very similar to RTA patients in the non-head injury group for interference. There was also significant interference for OCD words, which were third in order of presentation, but not for hospitalisation words, which were fourth in order of presentation. In addition, in the normal population, a practice effect is usually observed, where people increase speed with subsequent presentations (Connor, Franzen, & Sharp, 1988). Even patients with panic disorder have been found to show small but significant practice effects (McNally, Rieman, & Kim, 1990).

Other explanations for the interference effect

It is also possible that the interference observed on the emotional Stroop may not reflect processing at an implicit level. Patients with a head injury have been informed by the hospital staff that they have been in a road traffic accident, have been asked repeatedly for details about the accident, and will have been informed about some aspects of the accident from some police and witness reports. Some patients may develop traumatic “pseudomemories” (Bryant, 1996) for the event, for example constructed from fragments of memory, “islands of memory,” (King, 1997), or from secondary sources of the event, which could be argued may have led to intrusive interference on the Stroop task. Two patients in this study described what have been termed “islands of memory”. One female reported recalling herself screaming briefly following the accident at her boyfriend and then remembering nothing until two hours later when she was in hospital. A male patient had a brief recall of blood dripping down his motor bike helmet, which he experienced as an intrusive image. All other patients in the head injury had no recall for the event.
Factors not considered

There were other important factors that were not examined by this study. Rates of psychiatric disorder have been found to be higher in patients with brain injury than the general population (Deb et al., 1999). In particular, PTSD has a high co-morbidity rate with other psychiatric diagnoses, for example depression (Shalev, Freedman, Peri, Brandes, Sahar, Orr, & Pitman, 1998; Shore, Vollmer, & Tatum, 1989). Depression as a factor in interference scores was not assessed in this study, due to not wanting to overwhelm patients in the acute stages with a lengthy assessment. The role of depression in Stroop interference is somewhat uncertain. Previous studies (Bryant & Harvey, 1995; Harvey et al., 1996) additionally did not examine the relationship between interference and depression. However, McNally et al. (1990) found that there were significant correlations between interference for trauma related words and depression on the Profile of Mood States (POMS, McNair, Lorr, & Droppleman, 1971: cited in McNally et al., 1990). Furthermore, Bradley, Mogg, Millar, and White (1995) found that patients with generalised anxiety disorder and depression failed to show interference effects at the subliminal level on negative words, unlike patients with generalised anxiety disorder without depression. They suggested that depression may negate interference at the subliminal level.

Additionally, the influence of pain on cognitive performance on the Stroop and on severity ratings of ASD symptoms and state and trait anxiety was also not considered. Some road traffic accident patients in the non-head injury group described pain as serving as a trigger for intrusive memories and thoughts about the accident. Pain and related problems, such as affective distress, sleep disturbance and medication use can have a negative effect on cognitive performance (Nicholson, 2000; Nicholson, Martelli, & Zassler, 2001). However, all patients including controls were orthopaedic inpatients and in some physical discomfort. Whether they experienced similar subjective levels of discomfort was not assessed though. The effects of analgesic medication on interference and psychiatric rating scales was also a potentially confounding factor, as most patients were on some analgesic medication. However, patients were not assessed if they had taken morphine medication within the last 24 hours, due to problems related with euphoria and difficulty with concentration, in the form of confusion and disorientation (Kessler, 1998). The relationship between patient ratings of pain severity, level of analgesia, interference, trauma, and anxiety ratings would be an important comparison, particularly as pain in the form of persistent headache can be a focal concern in patients with persistent post-concussional syndrome (Nicholson et al., 2001). As previously mentioned, significant overlap has been found with PTSD symptoms and post-concussional syndrome (Bryant et al., 1996).
**Diagnostic utility of Acute Stress Disorder**

The diagnostic usefulness of Acute Stress Disorder in its present form has also come into question (Harvey & Bryant, 2002). A major criticism of the ASD diagnosis has been the emphasis placed on *dissociation*, which was theoretically rather than empirically driven (Bryant & Harvey, 1997). Although the predictive power of a diagnosis of ASD in the development of PTSD has been reported (Harvey & Bryant, 2000), the emphasis on dissociation in ASD has been criticised (Harvey & Bryant, 2002), largely because acute dissociation is not a prerequisite for the development of chronic PTSD. Instead, multiple pathways to developing PTSD may exist, which may or may not include dissociation (Harvey & Bryant, 2002).

**Future directions**

There are many further research questions that arise from this study. Firstly, a longitudinal study of the predictive power of trauma interference scores for patients both with and without head injury is essential, to examine the predictive validity of trauma-related interference with chronic psychopathology.

Comparisons with patients with head injury and ASD or PTSD against patients with head injury without ASD or PTSD would also be important, to investigate the combined effects of psychological trauma and cognitive deficit on trauma-related interference.

Other methods have examined the predictive power of acute emotional and physiological reactivity in relation to the development of PTSD. In particular, heart rate of patients on admission to hospital has been found to predict prognosis for PTSD (Bryant, Harvey, Guthrie, & Moulds, 2000; Shalev, Sahar, Freedman, Peri, Glick, Brandes, Orr, & Pitman, 1998). The predictive power of heart rate could also be tested in the head injury population, as a possible measure of implicit emotional response to the trauma. It could be incorporated with the Stroop paradigm, to see if Stroop interference correlates better with autonomic measures of arousal than self-report measures of arousal in this study.

The relationship with explicit memory would also be an interesting area to investigate further. For example, some patients with mild head injury recall memories for the event after a period of time. Harvey and Bryant (2001) found that 40% of patients who were initially significantly amnesic for their accident were able to remember their accident at two years post-trauma, particularly patients with shorter periods of posttraumatic amnesia. Patients may develop recall for the accident through various means, for example through reconstructing partial
memories of the event, through secondary sources, such as photographs, police and witness statements, or repeated discussion of the accident during treatment or compensation. Regardless of whether these memories represent real or “pseudomemories” (Bryant et al., 1996), it would be of interest to see whether interference scores believed to tap implicit memory decrease as explicit memory recall increases, in line with cognitive and psychoanalytic theories and treatments of PTSD (Brewin, 2001, Moore & Fine, 1990).

Implicit memory shortly after trauma could also be examined to ascertain further evidence for the implicit-explicit distinction following trauma. Patients with a head injury could be tested for implicit recall of events related to the trauma. For example, patients could be asked to recognise an important paramedic involved in their early care from pictures of distracters, or identify the name of the lead paramedic from multiple choice answers. Similar tests have been employed in the area of implicit memory and anaesthesia (Charlton, Wang, & Russell, 1993, Wang, 2003).

Anaesthesia research suggests that patients may show signs of implicit memory during periods of wakefulness during inadequate anaesthesia, but do not following full sedation (Russel & Wang, 2001). This research has looked at recall for factual information (lists of fruits, vegetables). In addition, Gidron, Barak, Henik, Gurman, & Steiner (2002) investigated implicit learning of emotional information under anaesthesia. Patients were presented with word-associates, half with negative emotionality and half with neutral emotionality. Patients responded significantly faster to negative emotional cues presented during anaesthesia than newly presented negative emotional cues. Transferring research from this area into the domain of head injury would suggest that patients with head injury may show no implicit memory during complete unconsciousness, but may demonstrate implicit learning during periods of fluctuating wakefulness, for example during posttraumatic amnesia following the head injury.

Lastly, incorporating functional neuroimaging data of patients carrying out the emotional Stroop task would be a useful further study. In particular, comparing neural activation of the brain regions identified in the development and maintenance of PTSD, such as the amygdala, hippocampus, association cortex and prefrontal cortex (Brewin, 2001; LeDoux, 1995), in patients with and without a head injury would be of particular interest.
References


## Appendices

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Appendix 1

Power calculations (G*POWER, Erdfelder et al., 1996)

Effect size $f = 0.5266$ (Calculated from mean and standard deviation scores from (Bryant & Harvey, 1995))

Alpha 0.05
Power 0.8
Groups 3

Total sample required = 39
Richard Coates  
PsychD in Clinical Psychology  
Department of Psychology  
University of Surrey  
Guildford  
Surrey GU2 7XU  

Our ref: DO/SG/N/02/076  

31st July 2002

Dear Mr Coates

Re: N/02/076 - How are people affected by a road traffic accident

Thank you for your letter of 18th July 2002 addressing the points of the Sub-Committee’s earlier letter. I am happy to tell you that I am now able to approve this study on Chairman’s action to be noted at future meeting of the Sub-Committee.

Please note the following conditions to the approval:

1. The Committee's approval is for the length of time specified in your application. If you expect your project to take longer to complete (i.e. collection of data), a letter from the principal investigator to the Chairman will be required to further extend the research. This will help the Committee to maintain comprehensive records.

2. Any changes to the protocol must be notified to the Committee. Such changes may not be implemented without the Committee or Chairman's approval.

3. The Committee should be notified immediately of any serious adverse events or if the study is terminated prematurely.

4. You are responsible for consulting with colleagues and/or other groups who may be involved or affected by the research, such as extra work for laboratories.
5. You must ensure that, where appropriate, nursing and other staff are made aware that research in progress on patients with whom they are concerned has been approved by the Committee.

6. The Committee should be sent one copy of any publication arising from your study, or a summary if there is to be no publication.

I should be grateful if you would inform all concerned with the study of the above decision.

Your application has been approved on the understanding that you comply with Good Clinical Practice and that all raw data is retained and available for inspection for 15 years.

Please quote the above study number in any future related correspondence.

Yours sincerely

DORA OPOKU
Chair
NELHA Research Ethics Sub-Committee
Dear Mr Coats,

Re: How are people who have experienced a head injury affected by a road traffic accident?

Thank you for your letter and enclosures relating to the above project. I will issue a letter on behalf of the Trust for Indemnity against negligence once conditional or full approval from the ELCHA Local Research Ethics Committee (LREC) has been received. I will hold on to the copy of your application until I receive a copy of the letter from the chairman granting conditional or full ethical approval for the project. It is better if you can send this letter to us promptly as it can take some time to come through from the LREC.

I would like to let you know that the R&D Office offers a comprehensive Research Project administration service which covers costing and pricing of the project, contract and price negotiation with Sponsors and the administration of your Project through the R&D Office. Please do feel free to make the most of the services available to you.

Please note that all NHS and social care research is now subject to the DoH Framework for Research Governance. If you are unfamiliar with the standards contained in this document, or the BLT policies that reinforce them, you can obtain details from the Trust R&D Office (14-2010/2403) or from the DoH Internet site. The address http://www.doh.gov.uk/research/rd3/nhsrandd/researchgovernance/main.htm will take you directly to the Research Governance Homepage.

The R & D Office is required to maintain a comprehensive database of all R & D projects with an NHS element by the Department of Health. To ensure that the database is continually updated Investigators are required to complete the attached registration form and return it to the R & D Office. If we do not have your project registered it does not exist as far as the DoH are concerned and this, therefore, affects the level of R&D Support Funding we can claim for the relevant clinical Directorate.

The joint Trust and Medical School Clinical Research Centre is now open for business. It is designed to accommodate anyone planning a funded clinical study, who might lack resources or facilities. A leaflet is attached for your further information and if you need support please do not hesitate to contact the Centre Manager on (020) 7882 7181.

If you wish to discuss any aspects with me or any members of my staff, please do not hesitate to contact the R&D Office on (020) 7377 7097.

With best wishes.

Yours truly,

Gerry Leonard, Assistant Director R&D
23 August 2002

Mr Richard Coates
Trainee Clinical Psychologist
Department of Psychology
University of Surrey

Dear Mr Coates

How are people who have experienced a head injury affected by a road traffic accident? (ACE/2002/66/Psych) – FAST TRACK

I am writing to inform you that the University Advisory Committee on Ethics has considered the above protocol under its 'Fast Track' procedure and has approved it on the understanding that the Ethical Guidelines for Teaching and Research are observed. For your information, and future reference, the Guidelines can be downloaded from the Committee’s website at http://www.surrey.ac.uk/Surrey/ACE/.

This letter of approval relates only to the study specified in your research protocol (ACE/2002/66/Psych) - Fast Track The Committee should be notified of any changes to the proposal, any adverse reactions and if the study is terminated earlier than expected, with reasons.

Date of approval by the Advisory Committee on Ethics: 23 August 2002
Date of expiry of approval by the Advisory Committee on Ethics: 22 August 2007

Please inform me when the research has been completed.

Yours sincerely

Catherine Ashbee (Mrs)
Secretary, University Advisory Committee on Ethics

cc: Chairman, ACE
Mr A Moss, Supervisor, Dept of Psychology
# APPENDIX A

## ACUTE STRESS DISORDER INTERVIEW

| Name: __________________________ | DOB _______ | Sex: M F |
| Interviewer: ____________________ | Referral Source: ____________________ |
| Date of trauma: ________________ | Date of Assessment ________________ |

**Description of trauma:**

<table>
<thead>
<tr>
<th>Comments about client presentation:</th>
</tr>
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<tbody>
<tr>
<td>-------------------------------------</td>
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### CRITERION A

<table>
<thead>
<tr>
<th>Item</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) When (Trauma) happened did you think that you or someone else was going to be seriously injured or die?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2a) When (Trauma) happened, did you feel very frightened?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2b) When (Trauma) happened, did you feel that there was nothing you could do about it?</td>
<td>0</td>
<td>1</td>
</tr>
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</table>

If Item (1) is coded 1 AND Item (2a) and/or Item (2b) are coded 1, Criterion A is met.

**Criterion A met:**

<table>
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**CRITERION B**

<table>
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</tr>
</thead>
<tbody>
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<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

For those items coded 1, ask:
How soon after the (Trauma) did you first start having these problems?
When was the last time you had any of these problems?

If 3 or more of Criterion B items are coded 1, Criterion B is met.

Criterion B met: Yes No

**CRITERION C**

<table>
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<td>1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

For those items coded 1, ask:
How soon after the (Trauma) did you first start having these problems?
When was the last time you had any of these problems?

If any of Criterion C items are coded 1, Criterion C is met.

Criterion C met: Yes No

**CRITERION D**

<table>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

244
4) Have you tried not to feel upset or distressed about the (Trauma)?

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

For those items coded 1, ask:
How soon after the (Trauma) did you first start having these problems?
When was the last time you had any of these problems?
If any of Criterion D items are coded 1, Criterion D is met.
Criterion D met: Yes _______ No _______

**CRITERION E**

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Since the (Trauma), have you had trouble sleeping?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2) Since the (Trauma), have you felt unusually irritable or have you lost your temper a lot more than usual?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3) Since the (Trauma), have you had difficulty concentrating?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4) Since the (Trauma), have you become much more concerned about danger or very much more careful?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5) Since the (Trauma), have you become jumpy or do you get easily startled by ordinary noises or movements?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6) When you are reminded of the (Trauma), do you sweat or tremble or does your heart beat fast?</td>
<td>0</td>
<td>1</td>
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</table>

For those items coded 1, ask:
How soon after the (Trauma) did you first start having these problems?
When was the last time you had any of these problems?
If any of Criterion E items are coded 1, Criterion E is met.
Criterion E met: Yes _______ No _______

**CRITERION F**

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
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<tbody>
<tr>
<td>1) Have you felt very upset by the symptoms you have experienced since the (Trauma)?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2) Have the problems which occurred as a result of the (Trauma) kept you from normal socializing or talking with people?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3) Have the problems which occurred as a result of the (Trauma) kept you from completing your normal work?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4) Have the problems which occurred as a result of the (Trauma) kept you from doing other things you need to do?</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
For those items coded 1, ask:
How soon after the (Trauma) did you first start having these problems? 
When was the last time you had any of these problems?
If any of Criterion F items are coded 1, Criterion F is met.
Criterion F met: Yes _______ No _______

CRITERION G
1) Have you taken medication or used drugs or alcohol at the time or since the (Trauma)?
   Yes _______ No _______
   If yes, specify which ________________________________________________________
   If yes, specify when was the last time _________________________________________

2) Have you suffered any medical conditions, including head injuries or losing consciousness, at the time or since the (Trauma)?
   Yes _______ No _______
   If yes, specify which ________________________________________________________
   If yes, specify when was the last time _________________________________________

If any Criterion G items are coded 1, consider if the substance use or medical condition may account for the previously described symptoms. If there is no evidence of substance use or medical condition accounting for the previously described symptoms, Criterion G is met.
Criterion G met: Yes _______ No _______

CRITERION H
Have the symptoms reported in the following criteria lasted longer than 2 days and less than 4 weeks after the trauma? This information is based on responses obtained in the relevant sections of the interview. [Note. Criterion B can occur during or following the trauma.]

Criterion C: Yes _______ No _______
Criterion D: Yes _______ No _______
Criterion E: Yes _______ No _______
If all Criterion H items are coded 1, Criterion H is met.

Criterion H met:  

<table>
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<th>TOTAL SCORE (Sum of items coded 1)</th>
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<td>Criterion B</td>
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</tr>
<tr>
<td>Criterion C</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Criterion D</td>
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<td>No</td>
</tr>
<tr>
<td>Criterion E</td>
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<td>No</td>
</tr>
<tr>
<td>Criterion F</td>
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<tr>
<td>Criterion G</td>
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<td>No</td>
</tr>
<tr>
<td>Criterion H</td>
<td>Yes</td>
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</tbody>
</table>

ASD Criteria met:  

Note. © 1999 by Richard A. Bryant.
MATERIAL REDACTED AT REQUEST OF UNIVERSITY
Appendix 5

Practice words

apple  cup  pencil  chimney  moustache  envelope

pencil  moustache  envelope  cup  chimney  apple
Neutral words

blanket maintenance sail pause game garden

sail game blanket pause maintenance garden

garden pause maintenance game sail blanket

game blanket garden sail pause maintenance

pause sail blanket game garden maintenance

blanket maintenance game garden sail pause
Positive words

lovely worthy praise dearest kindness nice

praise lovely nice kindness dearest worthy

nice praise worthy dearest lovely kindness

lovely kindness dearest worthy nice praise

worthy lovely nice praise dearest kindness

worthy lovely praise kindness nice dearest
OCD words

- germs filthy faeces urine dirty contaminate
- faeces contaminate urine dirty filthy germs
- urine contaminate dirty germs filthy faeces
- filthy germs dirty contaminate urine faeces
- germs urine faeces dirty filthy contaminate
- filthy contaminate germs dirty urine faeces
Major Research Project

Hospitalisation words

lights  mask   confused  amnesia  treatment  doctor

confused  treatment  doctor  mask  lights  amnesia

doctor  amnesia  lights  confused  mask  treatment

lights  mask  doctor  amnesia  treatment  confused

treatment  lights  amnesia  mask  doctor  confused

mask  treatment  lights  amnesia  confused  doctor
RTA words

emergency trapped scream smash death blood

smash scream blood emergency death trapped

death scream smash trapped blood emergency

trapped blood emergency death scream smash

scream death emergency blood smash trapped

blood emergency smash death trapped scream
Stroop scoring sheet

Practice
black (ap) red (cu) green (pe) blue (ch) yellow (mo) pink (en)
blue (pe) pink (pi) red (en) green (cu) black (ch) yellow (ap)

Neutral words
black (bl) red (ma) green (sa) blue (pa) pink (gam) yellow (gar)
pink (sa) blue (gam) yellow (bl) red (pa) green (ma) black (gar)
green (gar) pink (pa) black (ma) yellow (gam) red (sa) blue (bl)
red (gam) green (bl) blue (gar) yellow (sa) black (pa) pink (ma)
yellow (pa) black (sa) red (bl) green (gam) pink (gar) blue (ma)
pink (bl) yellow (ma) black (gam) red (gar) blue (sa) green (pa)

Time (seconds)

Positive words
green (lo) red (wo) black (pr) blue (de) yellow (ki) pink (ni)
yellow (pr) black (lo) green (ni) red (ki) pink (de) blue (wo)
red (ni) blue (pr) pink (wo) green (de) yellow (lo) black (ki)
blue (lo) green (ki) red (de) yellow (wo) black (ni) pink (pr)
green (wo) pink (lo) yellow (ni) red (pr) black (de) blue (ki)
black (wo) red (lo) green (pr) pink (ki) blue (ni) yellow (de)

Time (seconds)

OCD words
yellow (ge) blue (fi) black (fa) green (ur) red (di) pink (co)
red (fa) green (co) yellow (ur) pink (di) black (fi) blue (ge)
black (ur) red (co) blue (di) green (ge) pink (fi) yellow (fa)
<table>
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**green (fi)** pink (ge) yellow (di) black (co) red (ur) blue (fa)  
black (ge) blue (ur) pink (fa) green (di) red (fi) yellow (co)  
yellow (fi) blue (co) red (ge) black (di) pink (ur) green (fa)  

Time (seconds)

**Hospital words**

pink (li) green (ma) red (co) blue (am) black (tr) yellow (do)  
blue (co) yellow (tr) pink (do) red (ma) green (li) black (am)  
green (do) red (am) black (li) yellow (co) blue (ma) pink (tr)  
red (li) pink (ma) blue (do) yellow (am) green (tr) black (co)  
blue (tr) yellow (li) green (am) black (ma) red (do) pink (co)  
yellow (ma) red (tr) blue (li) pink (am) green (co) black (do)  

Time (seconds)

**RTA words**

red (em) blue (tr) green (sc) yellow (sm) pink (de) black (bl)  
blue (sm) black (sc) red (bl) pink (em) green (de) yellow (tr)  
black (de) blue (sc) red (sm) pink (tr) yellow (bl) green (em)  
red (tr) green (bl) blue (em) yellow (de) pink (sc) black (sm)  
yellow (sc) red (de) black (em) blue (bl) pink (sm) green (tr)  
pink (bl) yellow (em) green (sm) blue (de) black (tr) red (sc)  

Time (seconds) 257
## Patient details

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<tbody>
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</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Date of injury</td>
<td></td>
</tr>
<tr>
<td>Details of accident</td>
<td></td>
</tr>
<tr>
<td>PTA</td>
<td></td>
</tr>
<tr>
<td>Neurological consequences / specific lesions</td>
<td></td>
</tr>
<tr>
<td>Medication</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Highest Educational Attainment</td>
<td></td>
</tr>
<tr>
<td>Psychiatric history?</td>
<td></td>
</tr>
<tr>
<td>Traumatic history?</td>
<td></td>
</tr>
<tr>
<td>RTA / HI</td>
<td></td>
</tr>
<tr>
<td>Alcoholic history?</td>
<td></td>
</tr>
</tbody>
</table>
How are people affected by a road traffic accident?

Dear Participant,

You will be aware that we have talked about the road traffic accident that you were involved in during this research project. A few people who have been in an accident feel traumatised afterwards. If you feel that you want to speak to anyone about difficulties that you are experiencing after you leave hospital, please contact your G.P.

Yours sincerely,

Richard Coates
Trainee Clinical Psychologist
Appendix 8

Significant skewness and kurtosis for time since injury

RTA with head injury group

<table>
<thead>
<tr>
<th>Time since injury</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>Ss</td>
</tr>
<tr>
<td></td>
<td>1.983</td>
<td>0.580</td>
</tr>
</tbody>
</table>

S = skewness, Ss = standard error of skewness
K = kurtosis, Ks = standard error of kurtosis
Z = z score

Significant skewness or kurtosis = z scores greater than or equal to +/- 3.29.

Significant skewness and kurtosis for positive Stroop words

RTA without head injury group

<table>
<thead>
<tr>
<th>Positive words</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>Ss</td>
</tr>
<tr>
<td>Positive words</td>
<td>2.199</td>
<td>0.616</td>
</tr>
</tbody>
</table>

S = skewness, Ss = standard error of skewness
K = kurtosis, Ks = standard error of kurtosis
Z = z score

Significant skewness or kurtosis = z scores greater than or equal to +/- 3.29.

Significant skewness and kurtosis for interference scores

RTA with head injury group

<table>
<thead>
<tr>
<th>Interference</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>Ss</td>
</tr>
<tr>
<td>Positive interference</td>
<td>-2.105</td>
<td>0.580</td>
</tr>
<tr>
<td>Hospital interference</td>
<td>-2.096</td>
<td>0.580</td>
</tr>
<tr>
<td>RTA interference</td>
<td>-2.290</td>
<td>0.580</td>
</tr>
</tbody>
</table>

S = skewness, Ss = standard error of skewness
K = kurtosis, Ks = standard error of kurtosis
Z = z score

Significant skewness or kurtosis = z scores greater than or equal to +/- 3.29.
How are people who have experienced a head injury affected by a road traffic accident?

Hospital
Invitation to Participate in a Research Project

We invite you to take part in a research study, which we think may be important. The information, which follows, tells you about it. It is important that you understand what is in this leaflet. It says what will happen if you take part and what the risks might be. Try to make sure you know what will happen to you if you decide to take part. Whether or not you do take part is entirely your choice. Please ask any questions you want to about the research and we will try our best to answer them.

What is the research about?
The research concerns people who have been involved in a road traffic accident and have experienced a period of unconsciousness. The research aims to investigate how people are affected by their accident even if they don’t remember the accident.

What would the research involve?
The research would involve carrying out a short series of tasks, completing two short questionnaires and a short interview. The whole process should last 40 minutes in total. Details about the accident will also be sought from your medical notes. You will only be required to take part once in this research. It will not require you to come back to hospital. The research will take place during your stay in hospital, or at the time of an outpatient appointment.

What are the negative effects / benefits of taking part in the research?
There is a chance that talking about the accident may bring up some painful memories. However, if this occurs, it is very unlikely to be hazardous. Taking part in the research will be of benefit to people who have been involved in road traffic accidents, by seeing to what extent people are affected by the accident. It may help to treat anybody who has been affected at an early stage. A possible benefit to you would be an assessment of how you have reacted to the road traffic accident and an offer of treatment if required.
What about confidentiality?
The research is completely anonymous and confidential. No names will be included with the data. Only the researcher and their supervisors will have access to the research records.

Will this affect my treatment?
You don’t have to join the study. You are free to decide not to be in this study or to drop out at any time. If you decide not to be in the study, or drop out, this will not put at risk your ordinary medical care.

What happens if you are worried or if there is an emergency?
You will always be able to contact an investigator to discuss your concerns and/or to get help:

Name: Mr (Chartered Clinical Psychologist)
Address: Department of Psychology, , Hospital,
Telephone number:

We believe that this study is basically safe and do not expect you to suffer any harm or injury because of your participation in it. However, Trust has agreed that if your health does suffer as a result of your being in the study then you will be compensated. In such a situation, you will not have to prove that the harm or injury which affects you is anyone’s fault. If you are not happy with any proposed compensation, you may have to pursue your claim through legal action.
Major Research Project

WRITTEN CONSENT FORM:
Title of research: How are people who have experienced a head injury affected by a road traffic accident?

REC Number:
Name of Patient/Volunteer (Block Capitals):

• The study organisers have invited me to take part in this research.
• I understand what is in the leaflet about the research. I have a copy of the leaflet to keep.
• I have had the chance to talk and ask questions about the study.
• I know what my part will be in the study and I know how long it will take.
• I know how the study may affect me. I have been told if there are possible risks.
• I understand that I should not **actively** take part in more than 1 research study at a time.
• I know that the local East London and The City Health Authority Research Ethics Committee has seen and agreed to this study.
• I understand that personal information is strictly confidential: I know the only people who may see information about my part in the study are the research team or an official representative of the organisation which funded the research.
• I understand that my personal information may be stored on a computer. If this is done then it will not affect the confidentiality of this information. All such storage of information must comply with the 1998 Data Protection Act.
• I freely consent to be a subject in the study. No-one has put pressure on me.
• I know that I can stop taking part in the study at any time.
• I know if I do not take part I will still be able to have my normal treatment.
• I consent to my GP being informed about my participation in the study.
• I know that if there are any problems, I can contact:

Mr (Chartered Clinical Psychologist)
Tel. No. Bleep No./Ext. .................................

Patient’s/Volunteer’s: Signature ....................................................
Witness’s Name ...........................................................................
Witness’s Signature: ....................................................
Date ....................................................

As the Clinician/Investigator responsible for this research or a designated deputy, I confirm that I have explained to the patient/volunteer named above the nature and purpose of the research to be undertaken.

Clinician’s Name: ...........................................
Clinician’s Signature: .................................. Date: .....................................
## Appendix 10

### Within comparisons (overall group)

<table>
<thead>
<tr>
<th>Positive interference</th>
<th>OCD interference</th>
<th>Hospital interference</th>
<th>RTA interference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Rank</td>
<td>2.03</td>
<td>2.77</td>
<td>2.09</td>
</tr>
</tbody>
</table>

*Table I*

### Within comparisons (RTA with head injury group)

<table>
<thead>
<tr>
<th>Positive interference</th>
<th>OCD interference</th>
<th>Hospital interference</th>
<th>RTA interference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Rank</td>
<td>1.93</td>
<td>2.67</td>
<td>2.13</td>
</tr>
</tbody>
</table>

*Table II*

### Within comparisons (RTA without head injury group)

<table>
<thead>
<tr>
<th>Positive interference</th>
<th>OCD interference</th>
<th>Hospital interference</th>
<th>RTA interference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Rank</td>
<td>1.73</td>
<td>2.81</td>
<td>2.04</td>
</tr>
</tbody>
</table>

*Table III*

### Within comparisons (Control group)

<table>
<thead>
<tr>
<th>Positive interference</th>
<th>OCD interference</th>
<th>Hospital interference</th>
<th>RTA interference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Rank</td>
<td>2.40</td>
<td>2.83</td>
<td>2.10</td>
</tr>
</tbody>
</table>

*Table IV*
### Between group comparisons

<table>
<thead>
<tr>
<th>group</th>
<th>Mean rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA interference</td>
<td></td>
</tr>
<tr>
<td>RTA with head injury</td>
<td>28.77</td>
</tr>
<tr>
<td>RTA without head injury</td>
<td>21.08</td>
</tr>
<tr>
<td>Control</td>
<td>16.03</td>
</tr>
</tbody>
</table>

*Table V*
<table>
<thead>
<tr>
<th>Research Skill/Experience</th>
<th>Description of how research skill/experience acquired</th>
<th>Date research skill/experience acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct a literature search</td>
<td>A literature search was conducted for the major research proposal using BIDS, Medline, and Web of Science.</td>
<td>11/02</td>
</tr>
<tr>
<td>Critically review the literature</td>
<td>The literature for Acute Stress Disorder / Posttraumatic Stress disorder was critically reviewed for the introduction of the major research project.</td>
<td>01/03</td>
</tr>
<tr>
<td>Formulate a specific research question</td>
<td>A specific research question was developed for the major research project by examining the existing literature and previous research.</td>
<td>11/02</td>
</tr>
<tr>
<td>Write a brief research proposal</td>
<td>A brief research proposal was written for the service related research project and was submitted to the university course team.</td>
<td>01/01</td>
</tr>
<tr>
<td>Task</td>
<td>Description</td>
<td>Date</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Write a detailed proposal/protocol</td>
<td>A detailed proposal was written for the major research project and was submitted to the university course team, and subsequently for the hospital trust ethics committee.</td>
<td>11/02</td>
</tr>
<tr>
<td>Obtain appropriate supervision/collaboration for research</td>
<td>Appropriate supervision was obtained for the service related research project, from university course team members and from other related professionals. Appropriate supervision / collaboration was obtained for the major research, by liasing with university and field supervisors, as well as staff in the research setting.</td>
<td>03/01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>02/03</td>
</tr>
<tr>
<td>Write a participant information sheet and consent form</td>
<td>A participant information sheet and consent form was written for participants for the major research project.</td>
<td>06/03</td>
</tr>
<tr>
<td>Judge ethical issues in research and amend plans accordingly</td>
<td>Ethical issues were rigorously considered for the major research proposal. Following submission to a hospital trust ethics committee, mild adjustments were made following feedback.</td>
<td>07/03</td>
</tr>
<tr>
<td>Obtain approval from a research ethics committee</td>
<td>Ethics approval was obtained from a hospital trust ethics committee and the university ethics committee for the major research project.</td>
<td>08/03</td>
</tr>
<tr>
<td>Collect data from research participants</td>
<td>Data was collected from research participants for the major research project, using a hospital inpatient population.</td>
<td>01/03</td>
</tr>
<tr>
<td>Set up a data file</td>
<td>A data file was set up on SPSS for the service related and major research projects.</td>
<td>06/01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>06/03</td>
</tr>
<tr>
<td>Analyse quantitative data</td>
<td>Quantitative data was analysed for the service related research project and the major research project.</td>
<td>06/01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>06/03</td>
</tr>
<tr>
<td>Task Description</td>
<td>Description</td>
<td>Date(s)</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Analyse qualitative data</td>
<td>Qualitative data was analysed for the qualitative research project, through interviewing trainee clinical psychologists. This was done as a group project.</td>
<td>05/02</td>
</tr>
<tr>
<td>Summarise results in figures/graphs</td>
<td>Results were summarised in figures for both the service related research and the major research project.</td>
<td>06/01</td>
</tr>
<tr>
<td>Interpret results from data analysis</td>
<td>Results were interpreted from data analysis for both the service related research project and the major research project.</td>
<td>06/01</td>
</tr>
<tr>
<td>Present research findings/plans to an audience</td>
<td>Research findings for the service related research project were fedback to the service, by presenting to an audience of trainee clinical psychologists.</td>
<td>09/01</td>
</tr>
<tr>
<td>Produce a written report on a research project</td>
<td>A written report of the service related research was sent to course directors who allowed their trainees to take part in the research project.</td>
<td>07/03</td>
</tr>
<tr>
<td>Defend research project at an oral examination</td>
<td>The major research project was defended at a viva voce presentation.</td>
<td>09/03</td>
</tr>
<tr>
<td>Submit research report for publication in a journal/book</td>
<td>The service related research project is in preparation to be published.</td>
<td></td>
</tr>
</tbody>
</table>