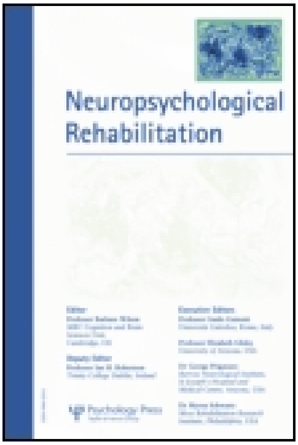

Neuropsychological Rehabilitation: An International Journal
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/pnrh20

"Am not was": Cognitive-behavioural therapy for adjustment and identity change following herpes simplex encephalitis

Bonnie-Kate Dewar [a] & Fergus Gracey [b]
[a] MRC Cognition and Brain Sciences Unit , Cambridge
[b] Oliver Zangwill Centre for Neuropsychological Rehabilitation , Ely, Cambridgeshire, UK

To cite this article: Bonnie-Kate Dewar & Fergus Gracey (2007) "Am not was": Cognitive-behavioural therapy for adjustment and identity change following herpes simplex encephalitis, Neuropsychological Rehabilitation: An International Journal, 17:4-5, 602-620, DOI: 10.1080/09602010601051610

To link to this article: http://dx.doi.org/10.1080/09602010601051610

NEUROPSYCHOLOGICAL REHABILITATION
2007, 17 (4/5), 602–620

Psychology Press
Taylor & Francis Group

"Am not was": Cognitive-behavioural therapy for adjustment and identity change following herpes simplex encephalitis

Bonnie-Kate Dewar[1], and Fergus Gracey[2]
[1]MRC Cognition and Brain Sciences Unit, Cambridge, [2]Oliver Zangwill Centre for Neuropsychological Rehabilitation, Ely, Cambridgeshire, UK

The cognitive sequelae of encephalitis are well documented, and it is increasingly recognised that disorders of mood and anxiety can accompany these sequelae. Loss of identity is emerging as a key theme in psychotherapeutic interventions in adjustment following acquired brain injury (ABI). Cognitive-behavioural therapy can be applied to construct a new model of the self in the context of behavioural, cognitive and social sequelae of the ABI, with consideration of pre-illness identity. Behavioural experiments, in particular, may be an effective means of redefining the meaning of current situations to create a positive sense of self. In the current paper we describe the therapeutic intervention to address anxiety and changes in identity in a woman recovering from herpes simplex viral encephalitis. The intervention highlights the need to take into account the interplay between cognitive changes, such as memory and executive function, with emotion in adjustment following herpes simplex viral encephalitis.

INTRODUCTION

The cognitive sequelae of herpes simplex viral encephalitis (HSVE) are well documented and include an anterograde and retrograde memory loss (see Hokkanen & Lannes, 2007 this issue), in addition to other cognitive deficits

---

Correspondence should be sent to Bonnie-Kate Dewar, MRC Cognition and Brain Sciences Unit, Box 58, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ, UK.
E-mail: bonnie-kate.dewar@mrc-cbu.cam.ac.uk

The authors would like to thank VO for her contributions, including the title of the paper, which was taken from one of her poems.

---

http://www.psypress.com/neurorehab DOI:10.1080/09602010601051610

such as executive dysfunction. Less is known about the affective sequelae of HSVE or other forms of encephalitis (see Pewter et al., 2007 this issue). However, as depression and anxiety are common following acquired brain injury (ABI; Hibbard, Uysal, Kepler, Bogdany, & Silver, 1998), in excess of community base rates for both disorders (Cantor et al., 2005), affective changes following encephalitis may be not unexpected. Application of therapeutic techniques to treat affective disorders following ABI, in particular for survivors of encephalitis, is in its infancy. Cognitive-behavioural therapy (CBT) has traditionally been advocated as the treatment of choice for anxiety and mood disorders (Roth & Fonagy, 1996), with an extensive evidence base to support this claim.

There is growing recognition of the complexity of psychological reactions to ABI. Affective disturbances arise from a complex interaction of neurological and psychosocial factors including premorbid personality, coping systems, the emotional trauma of the event, and the nature and severity of the injury (Whitehouse, 1994; Williams, Evans, & Fleminger, 2003; Tate, 2002). ABI can have a major impact on survivors' beliefs about themselves (McGrath & King, 2004). Changes and "threats" to identity have been described by survivors of traumatic brain injury (Tyerman & Humphrey, 1984; Nochi, 1998; Cantor et al., 2005) as they struggle to understand their present selves in the context of these cognitive, physical and psychosocial changes. Tyerman and Humphrey (1984) report that people identified strongly with their pre-injury self and held on to the hope of returning to this positively rated self, to the potential detriment of rehabilitation and long-term adjustment. Cantor et al. (2005) suggest that following TBI an individual has two self-images – "Who I was before the injury" and "Who I am now" – with implications for who "I" might become. They found that the discrepancy between these self-images was associated with anxiety and depression. Nochi (1998) identified three areas of "loss of self" following TBI from a narrative study of survivors' accounts of identity change. Loss of self was described in relation to pre- to post-injury comparison, loss of self in the eyes of others, and discontinuity of identity through lost or disrupted memories.

Although specific to the TBI population, these findings may be of relevance to understanding the adjustment issues facing survivors of HSVE. While the pathologies differ, issues concerning loss and changes of roles and abilities resulting from a sudden traumatic event, in the context of underlying significant cognitive impairment, and the need for the family and individual to adjust to these changed circumstances, are perhaps comparable. Regarding pathology, the organic contribution to emotional consequences of HSVE may centre more on temporal lobe damage, unilaterally or bilaterally, with some frontal involvement, whereas in TBI frontal and diffuse damage, with associated neurotransmitter changes, is more prevalent, with some involvement of anterior temporal lobes. The role of memory processes in relation to sense of self may be particularly pertinent in survivors of encephalitis. Conway (2005) has formulated a model of identity derived from research into autobiographical memory, again implicating the temporal lobes in identity-related processing. Individuals with amnesia may draw upon immediate memory as a reference point for their sense of self (Bachna, Sieggreen, Cermak, Penk, & O'Conner, 1998) or, conversely, upon intact long-term memories in the face of everyday memory problems. Given such pathology and related cognitive impairment, survivors of encephalitis may have difficulty incorporating new information and life experiences into their existing self-related representations (Tate, 2002).

Thus, there is converging evidence that discrepant self-representations contribute to affective distress following TBI, and possibly following encephalitis. Furthermore, helping survivors to redefine their identity and accept this new self emerges as a core goal of psychotherapy post-ABI (Prigatano, 1991; Whitehouse, 1994; Ylvisaker & Feeney, 2000). However, there is little description, and no systematic evaluation, of rehabilitation approaches to the management of affective disturbance relating to adjustment and identity change.

Modifications to established psychotherapeutic techniques for use in an ABI population have been described (see Kinney, 2001; McGrath & King, 2004; Whitehouse, 1994). Within cognitive-behavioural psychotherapy, behavioural experiments may help to provide a powerful means of redefining personal meanings of current situations (McGrath & King, 2004; Whitehouse, 1994). Bennett-Levy et al. (2004) suggest that behavioural experiments in CBT facilitate change at the underlying "implicational" level of processing (Ylvisaker & Feeney, 2000; Teasdale, 1996) thus being more focused on change in core representations of self, others and the world. A recent survey of psychotherapeutic strategies in the UK (Judd & Wilson, 2005) indicated that therapists rated behavioural experiments as the most effective means of addressing differences in expectations in traumatic brain injury survivors. Single case evidence for the possible effectiveness of CBT for the treatment of anxiety following ABI has been reported (Gracey, Oldham, & Kritzinger, 2007; Williams, Evans, & Fleminger, 2003). However, there have been few presentations of the affective sequelae and adjustment post-encephalitis.

In the current paper we describe our client VO, with retrograde autobiographical memory loss, prosopagnosia and significant distress associated with a sense of disrupted identity following HSVE. We present a cognitive-behavioural formulation attempting to draw clinical links between social, cognitive and emotional processes in terms of an ongoing sense of discrepant or threatened identity. We describe and compare the client's response to specific CBT techniques (anxiety management, negative automatic thought challenging, behavioural experiments) applied alone and integrated into work on improving social and family roles and participation. As this is a clinical description, we do not aim to test specific hypotheses regarding the nature of hypothesised processes involved in affective disturbance and identity change post-HSVE. Rather we seek to highlight the way in which CBT may provide a vehicle for formulating relevant processes as identified in the literature and to use this to guide treatment.

METHOD

Case Description: VO

VO was admitted to the district hospital at the age of 43 with confusion, following a 4-day history of pyrexial illness and headache. Magnetic resonance imaging (MRI) indicated high signal intensity in the right mesial temporal lobe, extending into the adjacent basal ganglia, insula and inferior frontal lobe. Limited high signal change was also evident in the left temporal lobe. VO was diagnosed with HSVE and treated with aciclovir. There was no prior medical history of note and she denied a premorbid history of depression or anxiety.

At the time of her admission, VO worked as a school nurse. She had completed approximately 12 years of school prior to specific training as a nurse. A word reading test (National Adult Reading Test–Revised, Nelson, 1982) indicated that her premorbid level of functioning was in the high average range. VO lived with her husband and four children, aged 16, 14, 11 and 9 at the start of intervention.

Assessment

Neuropsychological assessment was carried out at 1 month, 7 months and 16 months post-illness. Neuropsychiatric assessment was carried out 7 and 16 months post-illness. Detailed, integrated assessment of cognition, emotional adjustment, communication and functional restrictions and social participation (see Wilson et al., 2000) was carried out 16 months post-illness. Ongoing assessment of social participation was carried out through the setting and evaluation of goals during 6 months of holistic rehabilitation, which started 18 months post-illness.

Neuropsychological assessment

VO's principal cognitive complaint was of being unable to recognise familiar faces, including her own children and husband. She also reported autobiographical memory problems, such as a poor memory for how she knew friends. Neuropsychological assessment results are reported in Table 1.

There was evidence of a severe episodic and semantic memory impairment at the initial assessment. Executive function was variable, whereas attention was relatively preserved. Review assessments indicated ongoing difficulties with

TABLE 1
Neuropsychological test scores at initial and review assessments

	1 month post-illness	*7 months post-illness*	*16 months post-illness*
Memory			
RBMT-E overall	0	nt	nt
RMT Faces (percentile)	<5th	nt	nt
WMS-3 Logical Memory 1 (ss)	nt	10	nt
Logical Memory 2 (ss)	nt	9	nt
Visual Reproduction 1 (ss)	nt	12	nt
Visual Reproduction 2 (ss)	nt	6	nt
Attention-TEA			
Elevator Counting	Intact	Intact	nt
Elevator Counting with Distraction (ss)	13	nt	9
Visual Elevator (ss)	14	nt	11
Telephone Search (ss)	9	nt	8
Telephone Search While Counting (ss)	15	nt	11
Language			
Pyramids and Palm Trees	42/52	nt	nt
GNT (percentile)	<1st	nt	nt
BNT	nt	Low average	nt
Inference Test	nt	nt	8/10
Humour Test	nt	nt	0/10
Metaphor Written Test	nt	nt	1/10
Executive			
Verbal Fluency-FAS	Low average	nt	High average
BADS Rule Shift (ps)	4	nt	4
Action programme (ps)	4	nt	4
Key Search (ps)	3	nt	3
Temporal Judgement (ps)	2	nt	2
Zoo map (ps)	2	2	nt
Six Elements (ps)	1	4	nt
Face tests			
Benton Face Recognition	nt	Normal	Normal

RBMT-E = Rivermead Behavioural Memory Test–Extended (Wilson et al., 1999), RMT = Recognition Memory Test (Warrington, 1984), WMS-3 = Wechsler Memory Scale Third Version (Wechsler, 1997), TEA = Test of Everyday Attention (Robertson, Ward, & Ridgeway, 1994), Pyramids and Palm Trees (Howard & Patterson, 1992), GNT = Graded Naming Test (McKenna & Warrington, 1983), BNT = Boston Naming Test (Kaplan, Goodglass, & Weintraub, 1983), the Awareness of Social Inference Test (McDonald, Flanagan, & Rollins, 2002), BADS = Behavioural Assessment of the Dysexecutive Syndrome (Wilson, Alderman, Burgess, Emslie & Evans, 1996), ps = profile score, ss = scaled score, nt = not tested.

delayed visual recall, aspects of verbal memory, and word retrieval. Planning and abstraction were impaired. However, improvements were noted in memory function at review. In addition, face processing was satisfactory. Sixteen months following her illness, problems identifying both simple and paradoxical sarcasm and social inference were identified from assessment on the Awareness of Social Inference Test (TASIT; McDonald, Flanagan, & Rollins, 2002).

Assessment of emotional adjustment, mood and behaviour

VO stated that she became overwhelmed, anxious, and tearful in everyday situations, with associated shaking, pins and needles and headaches, such that she could not perform her pre-injury tasks. VO described her mood as low, with a loss of interest and feelings of hopelessness about the future. She also described sleep difficulties. The symptoms described by VO were not sufficient to warrant a formal diagnosis of a major depressive episode. VO met the criteria for an Axis I generalised anxiety disorder as an indirect consequence of an organic injury on the DSM-IV (American Psychiatric Association, 1994) with her excessive anxiety and worry over at least a 6-month period, and poor control of this worry. Her anxiety symptoms may have had an organic basis (Wise & Rundell, 1999).

Social participation restrictions

VO was unable to return to work and experienced substantial limitations in her ability to fulfil her roles as mother, wife and friend. Her husband and children had taken on responsibilities to manage the household. VO's social contacts continued but were limited in part through her concern about not recognising people or remembering personal semantic and autobiographical information relating to social relationships.

Measures

Efficacy of therapy and rehabilitation was measured through assessment of symptoms of anxiety and depression with the Beck Anxiety Inventory (BAI; Beck, 1993), and the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996). Changes in self-esteem were measured with the Robson Self-Concept Questionnaire (SCQ; Robson, 1989), a questionnaire measure of self-esteem validated with healthy controls and psychotherapy patients. A personal rating scale was also devised with VO based on repertory grid technique (Winter, 1992) to identify personal constructs relating to her construal of pre- and post-injury identity. The BDI was administered throughout her rehabilitation programme. Measures of the BAI, SCQ and personal rating scale were taken at the beginning, middle (week 12) and end (week 24) of her rehabilitation programme. Impact of therapy was also qualitatively assessed through within-session self-reports of confidence levels, and behaviourally through attainment of functional goals at the end of rehabilitation.

Formulation

VO's main presenting issue related to altered sense of identity, feeling "discrepant" from her self, consistent with previous research with TBI survivors (Cantor et al., 2005; Nochi, 1998; Tyerman & Humphrey, 1984). The cognitive model of post-traumatic stress disorder (PTSD) presented by Ehlers and Clark (2000) has as a central feature the notion of threat to self arising following a traumatic event. In part this relates to the meaning of the trauma and trauma symptoms given the individual's pre-trauma experiences and related beliefs and assumptions. While specific post-traumatic stress symptoms were not present for VO, it was felt helpful to draw on the notion of enduring threat to self and barriers to processing or updating beliefs and assumptions from this model to support formulation which is presented in Figure 1 and described below.

VO described her threatened sense of identity in terms of a distressing sense of being a "was" and articulated her broad goal for adjustment in terms of "becoming an 'am'". VO's report of her identity was very much tied up in her roles as mother, wife, friend and nurse. Of key significance was the presence of rigid assumptions such as, "If I can't recognise/remember my friends then I am a bad/uncaring person", or "If I don't do things for my children then I am a bad mother". These played a significant role in establishing vulnerability to specific trigger situations. Additional vulnerability factors relating to the impact of the encephalitis were also included in the formulation. With evidence of damage to the right insula and inferior frontal lobe, it may be that circuits mediating responses to threat were compromised (see Adolphs, 2001) such that her neurophysiological response to anxiety was exaggerated or difficult to switch off. Loss of autobiographical memories for a substantial period prior to her illness and the impact of this on adjustment post-illness were also included. Her inability to identify people due to her prosopagnosia was a significant factor contributing to her vulnerability to distress in many situations.

Specific trigger situations were identified as those highlighting a loss of, or threat to, identity, in that they directly challenged her assumptions and rules. These included:

- Failing to recognise or remember someone.
- Others doing things for her (especially at home and when the task was something she identified as her role).
- Family "not getting along" (especially fitting certain expectations such as always having meals together).

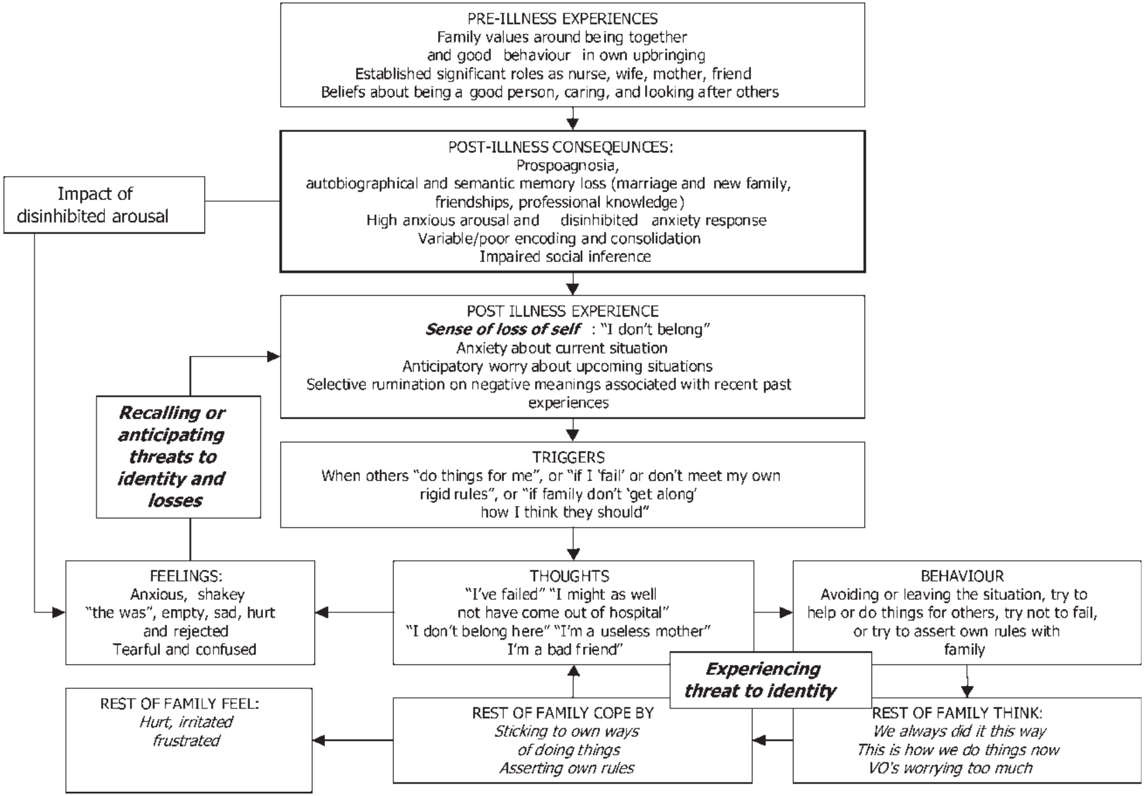

Figure 1. Longitudinal adapted CBT formulation presenting hypothesised vulnerability and maintenance factors for VO, including neurological, cognitive, and family factors.

Maintenance factors were the activation of thoughts relating to the personal meaning of losses and changes (such as her prosopagnosia, autobiographical memory loss, and inability to work). Attempts to reduce the distress and sense of threat to self in the short term were formulated as preventing adjustment in the longer term. Furthermore, selective attention to threats when in this anxious state contributed to biases in recall again contributing to an ongoing sense of threat to self and generalised beliefs about loss of self-worth and not belonging. In keeping with this model, self-discrepant appraisals of the meaning of poor coping were also seen as relevant.

Following VO's illness, her family attempted to reclaim their identity by taking on domestic chores, reassuring VO and continuing pre-illness as much as possible. VO felt disconnected from her family, in part due to the autobiographical memory loss and prosopagnosia. However, in addition her post-illness expectations of family behaviour were based on long-term memories of her own upbringing rather than current family life. Thus her family's behaviour was a trigger and maintaining factor for her own threatened identity. Her attempts to take control, to look after her children and to impose rigid rules were experienced by the family as a threat to the family way of doing things, leading to disagreements that acted as further triggers.

Background to treatment

VO was initially seen fortnightly on an outpatient basis to address her goals of face identification and adjustment to the encephalitis. She was then referred to the Oliver Zangwill Centre (OZC) and underwent a holistic neuropsychological rehabilitation programme (see Wilson et al., 2000). In brief, the programme consists of a combination of group and individual sessions organised around client-centred goals, split into two consecutive 12-week phases. VO's CBT continued within this context, and was integrated into her rehabilitation as described by Williams et al. (2003) and Gracey, Brentnall, and Megoran (2005).

A range of functional goals were identified in independent living skills (to effectively use a memory and planning system to achieve at least 75% of planned activities, and to have a shared system with her family), social leisure, vocation (including testing work skills in a voluntary work placement) and self-advocacy (to develop a shared understanding of her illness with her family). In order to make gains in these areas a number of psychological, cognitive and communicative goals were set to address lost skills, to compensate for impairments and to facilitate emotional adjustment individually and in the family. Goals for her CBT included reduction in anxiety, increasing confidence and developing a more positive sense of self.

Intervention I: "Standard" CBT techniques

Intervention followed a broad CBT protocol starting with education and socialisation to the model, and development of the therapeutic relationship. Following this, sessions focused on self-monitoring of emotional responses and learning to identify negative automatic thoughts (Padesky & Greenberger, 1995), learning in-situ breathing techniques to manage anxiety symptoms and development of an initial, maintenance cycle based collaborative formulation. Adaptations to this due to the sequelae of her encephalitis initially included provision of information about cognitive changes subsequent to encephalitis and management of subjective complaints of memory, fatigue and person identification deficits.

Intervention II: Use of behavioural experiments to facilitate adjustment

The initial maintenance cycle formulation of anxiety was elaborated with VO, and lead to the formulation as presented in Figure 1. The focus of the intervention changed to address VO's identity-related cognitive representations at an implicational level of processing. Formulating adjustment in terms of responses to threats to self and related psychological and neurocognitive barriers led to consideration of the need to reduce self-discrepancy in the following ways:

- Providing new positive experiential learning opportunities.
- Reducing "loss of self" through compensation or relearning lost personal semantic autobiographical memory and face recognition.
- Addressing threat to self associated with role changes with VO and her family by supporting the family to find a shared understanding.

Experiments were devised to test specific unhelpful cognitions that VO held about her self (McGrath & King, 2004) and to consolidate new appraisals or explore alternate meanings (Mooney & Padesky, 2000). These experiments commenced during her outpatient treatment and continued as a central vehicle of her holistic rehabilitation programme. Key experiments are described in Table 2 to illustrate the problems and the process involved.

Follow-up

At the conclusion of the integration phase of rehabilitation, the strategies and learning experiences developed through these and other experiments and experiences during rehabilitation were summarised into tables to act as

TABLE 2
Examples of key experiments conducted during stand-alone CBT and within the context of holistic rehabilitation (AM = autobiographical memory)

	Value as a friend and AM loss	*Rigid assumptions about role*	*Social communication at home*	*Compensating for prosopagnosia*	*Family culture and AM loss*
Problem	Loss of AM for many friendships	Insisting on doing things for her children, disagreements with them and husband	Failure to pick up on humour and sarcasm appropriately	Concern about loss of face recognition. Unwilling to use compensatory strategies or ask the other person	Retrograde amnesia for much of her married life compounding sense of detachment from family
Target cognition	"I am a bad friend" "Without my memories I can't be a friend" "They think I don't care about them"	"If I don't do my utmost for my children I'm a bad mother"	"My family are being cruel and rejecting"	"It's unfriendly/rude to ask people who they are – they will be offended"	"The family don't get along . . . I've failed as a mother"
Alternative perspective	*Not identified*	"If I don't do things for them maybe it's not the end of the world"	"This might not be the case, it might be my difficulty understanding or interpreting what's going on"	*Not identified*	"Mistakes are acceptable, others won't judge me harshly, reject me and it is not a sign I'm no good"
Prediction	"If the assumptions are true, then they will not want to see me, and I will not be able to feel included with them"	*Not identified*	*Not identified*	*Not identified*	*Not identified*

Experiment	Develop friendship book to support relearning of personal autobiographical memories and provide a focus for interacting with friends	Resist making coffee/tea for children	Learning about verbal and non-verbal cues in communication group. Monitoring these at home to improve encoding and interpretation.	Staff and clients do not wear name badges for a day: test communication strategy to ask others in rehab centre if unsure who someone is	VO and her family set one night per week to review old family videos
Results	Successful, enjoyable, positive experiences with friends No negative feedback	Held back from making drinks for her children	Identified specific situations in which family were using humour or sarcasm and was able retrospectively to understand	Observed others were not offended when asked	Family gathered once a week to watch old videos together. Family shared stories and got along, engaged in "banter"
Reflection	"Even though I have memory problems, it does not take away our special friendship"	"Able to not do things for children without this meaning I'm a bad mother. Maybe I can be more flexible about some of my rules"	"My family do care for me." Reported an increased sense of belonging at home	"It's okay to ask others about who they are if I'm not sure"	"My family do get along . . . I do belong." Reported being able to retrieve some memories. This was further reinforced with the family in a family therapy session

a "strategy tool box" for VO to refer to in the future. Individual and couples CBT sessions were set up to facilitate extension of learning and adjustment in family, work and social contexts.

RESULTS

VO's scores on the BDI are shown in Figure 2. She scored in the moderate to severe range of symptoms of depression at the time of her 7 and 16-month assessments. However, this jumped to a severe level of depressive symptoms at the beginning of her rehabilitation programme. There was some mild decline of ratings of depressive symptoms during her programme to the moderate level at the beginning of the integration phase, returning to the severe range towards the end of the programme.

VO's scores on the BAI are reported in Figure 3. Seven months after her illness, there was evidence of a severe level of anxiety symptoms. At the time of her detailed assessment, 16 months after her illness, anxiety levels remained in the moderate range. Ratings of anxiety remained in the severe range throughout her rehabilitation programme.

At the beginning of VO's intensive rehabilitation programme, 16 months after her illness, the SCQ indicated that her self-esteem was more than two standard deviations below the norm for controls. Over the first three months of rehabilitation, her score remained in this range. However, towards the end of her programme self-esteem had improved with her score moving to just over one standard deviation below the norm, dropping again slightly at six-week follow-up.

On a personal construct scale developed with VO, she rated her pre-injury and ideal self with traits including confidence, belonging, being there for

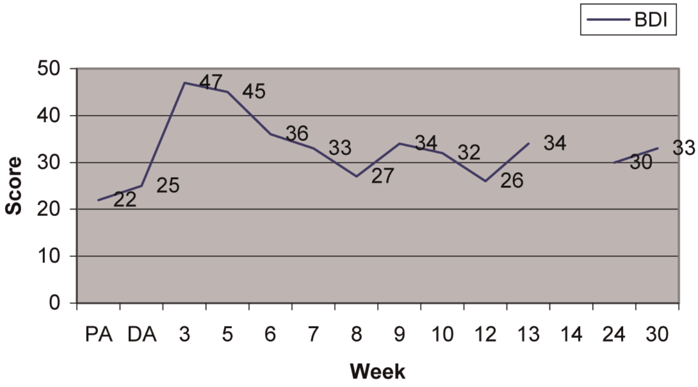

Figure 2. VO's scores on the Beck Depression Inventory. PA = Preliminary Assessment, DA = Detailed Assessment, Week = Weeks of OZC rehabilitation programme.

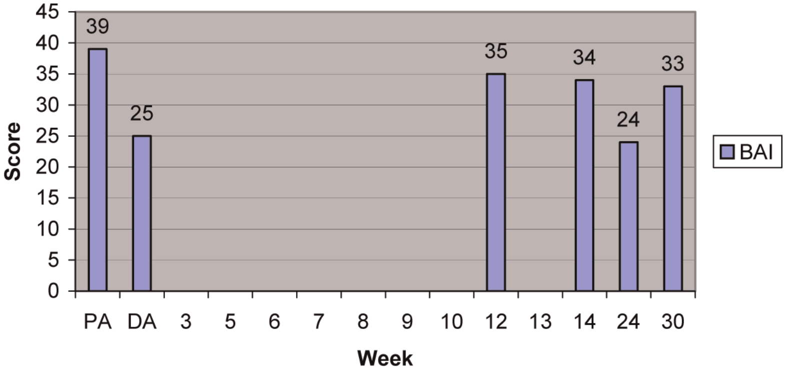

Figure 3. VO's scores on the Beck Anxiety Inventory. PA = Preliminary Assessment, DA = Detailed Assessment, Week = Weeks of OZC rehabilitation programme.

others, independence, happiness, and doing things that "Reinforce who I am". In contrast, at the start of her rehabilitation, VO perceived her present self as uncertain, struggling in social situations with a reduced sense of belonging, dependent, and with low confidence and mood. There was a high degree of overlap between her ideal self and how she saw herself before the encephalitis. This was interpreted as indicating significant current-past and current-ideal discrepancy. At the beginning of the integration phase – week 12 of her OZC rehabilitation programme – there had been some shift in her ratings with 17/25 items rated as closer to her ideal self than at the start of rehabilitation. The greatest ratings of change (four points on a seven-point scale) were in relation to adjustment. Positive change was also rated in relation to optimism, being there for others, independence, happiness and social confidence. However, VO continued to rate herself as, "Uncertain of where things were going', and "I've lost me". This pattern was broadly replicated in her ratings at the end of rehabilitation.

In terms of social participation, by the end of rehabilitation VO had achieved goals of developing a shared understanding of her illness with her family and reported feeling comfortable and understood by her family. She was making effective use of her memory and planning system to achieve routine domestic tasks. VO had completed two voluntary work placements in the second phase of rehabilitation, effectively managing the impact of her difficulties in these work settings.

DISCUSSION

In this paper we have described the psychotherapeutic intervention with a woman who presented with symptoms of anxiety and depression following

HSVE. We formulated her affective distress in terms of changes to identity, specifically her negative interpretation of the discrepancy between her pre-illness self and her post-illness role fulfilment. Neuropsychological factors, especially prosopagnosia and autobiographical memory loss, also contributed to her presentation. Changes to the neurophysiological modulation of anxiety as a result of her encephalitis may also have contributed to her distress. Sessions initially introduced in situ anxiety management strategies involving controlled breathing and recording and challenging automatic thoughts in anxiety provoking situations. When these interventions did not prove fruitful, therapy focused on testing assumptions and beliefs related to VO's self-representations through the use of behavioural experiments. At the conclusion of her rehabilitation programme, VO's qualitative feedback indicated a more integrated pre- and post-encephalitis identity, with increased confidence in her functional abilities. A personal construct rating scale indicated positive adjustment towards ratings of constructs of her pre-injury and current self such as independence, control, having a role with others, and self-acceptance. This measure thus indicated a reduction in self-discrepancy as rated by VO. A standardised measure of self-esteem indicated ratings of increased self-esteem at the end of her programme, although still below the norm. VO attained goals relating to personal and family understanding of her illness and its consequences. However, standardised measures of anxiety and depressive symptoms remained elevated.

Weaknesses of the current paper mainly centre on the fact that this is a case description, supported by some measurement but without a methodology that allows firm conclusions about the relative merits of components of CBT and rehabilitation in relation to identity, affective distress and social participation to be drawn. Measures were not administered systematically throughout all aspects of intervention and rehabilitation. Medication changes occurred during treatment, including the prescription of an antidepressant at the start of rehabilitation. While descriptive accounts of the stand-alone, adapted CBT and behavioural experiment-based approaches are provided, these approaches are not systematically compared, and issues such as intensity of treatment and ordering effects may account for apparent differential responses. Further issues concern the relevance of choice of measures, especially the BDI, which includes biological and cognitive symptoms that overlap significantly with the consequences of HSVE.

Nevertheless, reduced self-discrepancy and improved acceptance was indicated from the personal construct and self-esteem measures, in addition to goal attainment. As such, the current case highlights the potential usefulness of behavioural experiments in the treatment of adjustment-related affective disorders subsequent to neurological injury, as suggested by McGrath and King (2004). We suggest that behavioural experiments may be effective in producing change because processing of information occurs at an implicational level where mental models of the self are constructed (Bennett-Levy et al, 2004; Ylvisaker & Feeney, 2000). The process of behavioural experiments carried out with VO may have facilitated reduction in discrepancy between self-representations as highlighted in pre–post-illness comparisons, loss of autobiographical memory, and social and family interactions. These experiments also allowed appreciation of alternative perspectives, contributed to more flexible rules about herself and others, and allowed exploration and development of appropriate strategies for managing cognitive changes.

Ylvisaker (personal communication) advocates that people will only incorporate a positive sense of self if they are doing something that gives a sense of reality to the positive aspects of this sense of self. The notion that CBT, and in particular behavioural experiments, may be particularly well suited for use in a neurological population, with the structured approach to problem solving, emphasis on learning opportunities, and use of documentation to record outcomes, is supported. The experimental approach appears to lend itself well to integration into multidisciplinary rehabilitation. The concrete feedback provided in a behavioural experiment may facilitate awareness not only of balanced appraisals as in the case of VO but also of the impact of cognitive impairments on function (Judd & Wilson, 2005), and support therapists in collaborating with clients in evaluating the utility of compensatory strategies. Inclusion of family in rehabilitation, and the need to consider identity changes in terms not only of intrapersonal factors (e.g., comparison of pre–post-ABI self, loss of memories) but also interpersonal factors, is again highlighted (Yeates, Henwood, Evans, & Gracey, 2007). In this case, the notions of self-discrepancy (Cantor et al., 2005; Tyerman & Humphrey, 1984) and of loss of self (Nochi, 1998) appear relevant to adjustment following HSVE. The specific interactions between cognitive change, altered experience of identity, and neural processes required to support psychotherapeutic change require further elucidation. The developing field of the cognitive neuroscience of psychotherapies (predominantly CBT, see Kumari, 2006, for a review) may help provide a neurological basis for devising and adapting psychotherapies for ABI to be optimally effective where processes implicated in emotional and behavioural change may be impaired.

CONCLUSION

Psychotherapeutic intervention in neurological populations thus continues to present challenges. The formulation developed and presented here was based on an integration of findings from the limited TBI and ABI literature on identity and affective disturbance, and established cognitive models of identity and post-traumatic stress. This must be seen as a highly tentative model and further evaluation of hypothesised neurocognitive processes involved in identity and psychotherapy following ABI, including encephalitis, is warranted. However, issues relating to self-discrepancy, and both intrapersonal and interpersonal aspects of loss of self are relevant areas for further investigation. Behavioural experiments appear to be a viable way of integrating emotional adjustment, cognitive rehabilitation and increased social participation in multidisciplinary rehabilitation. Further research into the interplay between neurobiological, rehabilitative and psychotherapeutic processes following ABI such as encephalitis is needed in order for effective treatment approaches addressing cognitive and emotional changes together to be developed.

REFERENCES

Adolphs, R. (2001). The neurobiology of social cognition. *Current Opinion in Neurobiology*, *11*(2), 231–239.

American Psychiatric Association (1994) *Diagnostic and Statistical Manual*, *4th Edition*. Arlington, VA: American Psychiatric Association.

Bachna, K., Sieggreen, M. A., Cermak, L., Penk, W., & O'Conner, M. (1998). MMPI/MMPI-2: comparisons of amnesic patients. *Archives of Clinical Neuropsychology*, *13*(6), 535–542.

Beck, A. T. (1993). *Beck Anxiety Inventory*. San Antonio, TX: Harcourt Assessment Inc.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck Depression Inventory-II*. San Antonio, TX: Harcourt Assessment Inc.

Bennett-Levy, J., Westbrook, D., Fennell, M., Cooper, M., Rouf, K., & Hackmann, A. (2004). Behavioural experiments: Historical and conceptual underpinnings. In J. Bennett-Levy, G. Butler, M. Fennell, A. Hackmann, M. Mueller, & D. Westbrook (Eds.), *Oxford guide to behavioural experiments in cognitive therapy* (pp. 1–20). Oxford: Oxford University Press.

Benton, A. L., Allen, M. W. V., Varney, N. R., & Spreen, O. (1983). *Contributions to neuropsychological assessment*. New York: Oxford University Press.

Cantor, J. B., Ashman, T. A., Schwartz, M. E., Gordon, W. A., Hibbard, M. R., Brown, M., Spielman, L., Charatz, H., Cheng, Z. (2005). The role of self-discrepancy theory in understanding post-traumatic brain injury affective disorders: A pilot study. *Journal of Head Trauma Rehabilitation*, *20*(6), 527–543.

Ehlers, A., & Clark, D.M. (2000). A cognitive model of PTSD. *Behaviour Research and Therapy*, *38*, 1–28.

Gracey, F., Brentnall, S., & Megoran, R. (2005). "No room for error?": Identity, cognitive therapy and rehabilitation of executive impairment following TBI: An illustrative single case. *Journal of the International Neuropsychological Society*, *11*(S2), 77–78.

Gracey, F., Oldham, P., & Kritzinger, R. (2007). Finding out if "The 'me' will shut down": Successful cognitive-behavioural therapy of seizure related panic symptoms following subarachnoid haemorrhage – a single case report. *Neuropsychological Rehabilitation, 17*, 106–119.

Hibbard, M. R., Uysal, S., Kepler, K., Bogdany, J., & Silver, J. (1998). Axis I psychopathology in individuals with traumatic brain injury. *Journal of Head Trauma Rehabilitation*, *13*(4), 24–39.

Hokkanen, L., & Launes, J. (2007). Neuropsychological sequelae of acute-onset sporadic viral encephalitis. *Neuropsychological Rehabilitation*, *17*, 450–477.

Howard, D., & Patterson, K. (1992). *The Pyramids and Palm Trees Test.* Bury St. Edmunds, UK: Thames Valley Test Company.

Judd, D., & Wilson, S. L. (2005). Psychotherapy with brain injury survivors: An investigation of the challenges encountered by clinicians and their modifications to therapeutic practice. *Brain Injury*, *19*(6), 437–449.

Kaplan, E., Goodglass, H., & Weintraub, S. (1983). *Boston Naming Test.* Philadelphia: Lee & Febiger.

Kinney, A. (2001). Cognitive therapy and brain-injury: Theoretical and clinical issues. *Journal of Contemporary Psychotherapy*, *31*(2), 89–102.

Kumari, V. (2006) Do psychotherapies produce neurobiological effects? *Acta Neuropsychiatrica*, *18*, 61–70.

McDonald, S., Flanagan, S., & Rollins, J. (2002) *The Awareness of Social Inference Test.* San Antonio, TX: Harcourt Assessment Inc.

McGrath, J., & King, N. (2004). Acquired brain injury. In J. Bennett-Levy, G. Butler, M. Fennell, A. Hackmann, M. Mueller, & D. Westbrook (Eds.), *Oxford guide to behavioural experiments in cognitive therapy* (pp. 331–348). Oxford: Oxford University Press.

McKenna, P., & Warrington, E. K. (1983). *Graded Naming Test.* Windsor, UK: NFER-Nelson.

Mooney, K. A., & Padesky, C. A. (2000). Applying client creativity to recurrent problems: Constructing possibilities and tolerating doubt. *Journal of Cognitive Psychotherapy: An International Quarterly*, *14*(2), 149–161.

Nelson, H. (1982). *The National Adult Reading Test (NART).* Windsor, UK: NFER-Nelson.

Nochi, M. (1998). 'Loss of self' in the narratives of people with traumatic brain injuries: A qualitative analysis. *Social Science and Medicine*, *46*(7), 869–878.

Padesky, C. A., & Greenberger, D. (1995). *Mind over mood: Change how you feel by changing the way you think.* New York: Guilford Press.

Pewter, S. M., Williams, W. H., Haslam, C., Kay, J. M. (2007). Neuropsychological and psychiatric profiles in acute encephalitis in adults. *Neuropsychological Rehabilitation*, *17*, 478–505.

Prigatano, G. P. (1991). Disordered mind, wounded soul: The emerging role of psychotherapy in rehabilitation after brain injury. *Journal of Head Trauma Rehabilitation*, *6*(4), 1–10.

Robertson, I. H., Ward, T., & Ridgeway, V. (1994). *The Test of Everyday Attention.* Bury St Edmunds, UK: Thames Valley Test Company.

Robson, P. (1989). Development of a new self-report questionnaire to measure self esteem. *Psychological Medicine*, *19*(2), 513–518.

Roth, A., & Fonagy, P. (1996). *What works for whom? A critical review of psychotherapy research.* New York: Guilford Press.

Teasdale, J. D. (1996). Clinically relevant theory: Integrating clinical insight with cognitive science. In P. Salkovskis (Ed.), *Frontiers of cognitive therapy* (pp. 26–47). New York: Guilford Press.

Tate, R. L. (2002). Emotional and social consequences of memory disorders. In A. D. Baddeley, M. D. Kopelman, & B. A. Wilson (Eds.), *The handbook of memory disorders* (2nd ed., pp. 785–808). Chichester, UK: John Wiley.

Tyerman, A., & Humphrey, M. (1984). Changes in self-concept following severe head injury. *International Journal of Rehabilitation Research*, *7*(1), 11–23.

Warrington, E. K. (1984). *The Recognition Memory Test*. Windsor, UK: NFER–Nelson.

Wechsler, D. (1997) *Wechsler Memory Scale III.* San Antonio, TX: The Psychological Corporation.

Whitehouse, A. M. (1994). Applications of cognitive therapy with survivors of head injury. *Journal of Cognitive Psychotherapy: An International Quarterly*, *8*(2), 141–160.

Williams, W. H., Evans, J. J., & Fleminger, S. (2003). Neurorehabilitation and cognitive-behaviour therapy of anxiety disorders after brain injury: An overview and a case illustration of obsessive-compulsive disorder. *Neuropsychological Rehabilitation*, *13*(1–2), 133–148.

Wilson, B. A., Alderman, N., Burgess, P., Emslie, H., & Evans, J. (1996). *Behavioural Assessment of the Dysexecutive Syndrome*. Bury St Edmunds, UK: Thames Valley Test Company.

Wilson, B. A., Clare, L., Baddeley, A. D., Cockburn, J., Watson, P., & Tate, R. (1999). *The Rivermead Behavioural Memory Test – Extended Version*. Bury St Edmunds, UK: Thames Valley Test Company.

Wilson, B. A., Evans, J., Brentnall, S., Bremner, S., Keohane, C., & Williams, H. (2000). The Oliver Zangwill Centre for Neuropsychological Rehabilitation: A partnership between health care and rehabilitation research. In A. L. Christensen & B. P. Uzzell (Eds.), *International handbook of neuropsychological rehabilitation* (pp. 231–246). New York: Kluwer Academic/Plenum Publishers.

Winter, D. A. (1992) *Personal construct psychology in clinical practice: Theory, research and applications*. London: Routledge.

Wise, M. G., & Rundell, J. R. (1999). Anxiety and neurological disorders. *Seminars in Clinical Neuropsychiatry*, *4*(2), 98–102.

Yeates, G., Henwood, K., Gracey, F., & Evans, J. J. (2007). Awareness of disability after acquired brain injury (ABI) and the family context. *Neuropsychological Rehabilitation*, *17*, 151–173.

Ylvisaker, M., & Feeney, T. (2000). Reconstruction of identity after traumatic brain injury. *Brain Impairment*, *1*, 12–28.