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Behavioural psychotherapy of the frontal-lobe-injured patient in an outpatient setting

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We present two cases of outpatient behavioural psychotherapy of frontal-lobe brain-injured adults. Unlike inpatient treatment of severely frontal-injured patients in which the hospital setting acts on the patient to modify behaviour, outpatient treatment teaches the self-motivated individual to use the structure and directiveness of behavioural psychotherapy to overcome his or her neuropsychological deficits. The literature describes two types of frontal syndromes: disinhibition and adynamia. Treatment of both types of syndromes is illustrated using case presentations. The therapeutic interventions for both syndromes are designed to exaggerate the link between stimulus and response to counter impaired processing of feedback. A six-stage behavioural psychotherapy model of the frontal-injured patient is outlined.

Introduction

Most traumatic brain injuries, in particular those that result from road accidents, are diffuse injuries almost always involving the frontal lobes. The literature distinguishes between two subtypes of frontal lobe syndrome—disinhibition and adynamia. Disinhibition is characterized by inadequate self-monitoring resulting in impulsive and inappropriate social behaviour. This impairment is usually attributed to lesions involving the orbital/basal areas of the frontal lobes. Adynamia is marked by a general apathy expressed in passivity and lack of initiative and usually involves the lateral cortical surface of the frontal lobe [1].

Borrowing terminology from psychopathology, Blumer and Benson (1975) labelled these two frontal lobe subtypes as pseudopsychopathic and pseudo-depression [2]. Thus, damage to the frontal lobes has marked implications for the regulation of social/behavioural functioning. These impairments in social behaviour were found to be the critical factor in determining failure to return to work after head injury [3]. Thus it seems clear that treatment of frontal injuries must address these maladaptive behavioural changes.

This paper will present our clinical experience in treating the frontal-injured patient in a behavioural-oriented therapy. It is important to differentiate between two types of patient populations and their correspondingly different behavioural therapies: acute and/or severely injured patients to be treated with orthodox behaviour modification

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in an inpatient setting; and moderately injured patients treated by behavioural psychotherapy in an outpatient setting.

Previous literature on the treatment of behavioural disorders in the brain-injured patient concerns the inpatient setting [4–6]. Hospital staff use the controlled environment to modify maladaptive behaviour. The patient, usually at an acute low state of functioning, shows no distress over his or her inability to control and regulate his behaviour. The motivation for change stems primarily from the patient's inability to adapt to the daily demands of the environment. Treatment goals as described by Wood (1984) are to 'eliminate unmanageable behaviour and improve communication between patients and staff' (p. 217) [6]. Thus, it seems that orthodox behaviour modification techniques are the most appropriate form of intervention in the treatment of the brain-injured patient in an acute inpatient setting.

Outpatient behavioural psychotherapy of the brain-injured patient differs significantly from inpatient treatment. In an outpatient setting the client has generally achieved a reasonable degree of self-control and modulation which enables him or her to negotiate the daily living demands outside an institutionalized setting. The patient's motivation to change his or her current situation usually stems from the patient's and immediate family's psychological distress. Although the patient suffers from an impaired ability to process and learn from feedback, he or she is sensitive enough to appreciate the consequences of his behaviour, usually rejection and devaluation. The entire process of therapy and ultimately its success are primarily determined by the patient's ability and motivation for change.

The means of change in behavioural psychotherapy [7] incorporate such factors as the patient–therapist relationship [8], the patient belief-system or self-instruction [9, 10] and the social context of the patient's life [11]. Clearly, behavioural psychotherapy relates to the broad spectrum of psychological function and does not only confine itself to behaviour. Treatment goals are more comprehensive and include an expectation of generalizing the change to all areas of life and an ability to express change independently of therapy.

Prior to the description of the actual treatment cases, we would like to present a conceptualization of behavioural psychotherapy in a model of stages. Although the behavioural goals were clear, the stages of the therapy only became evident on completion and analysis of the therapies.

These stages can be summarized as follows:

1. Establishment of therapeutic alliance;
2. Diagnostic evaluation;
3. Selection of problem(s) to be treated;
4. Behavioural intervention;
5. Working through resistances to change;
6. Generalizing and internalizing adaptive behavioural change.

1. Establishment of therapeutic alliance

Patients frequently present with poor awareness of their problems and, thus, their degree of distress and motivation for change are at best inconsistent. This inconsistency creates an unstable therapeutic alliance. The therapist is frequently in need of the family's assistance in not so subtly 'reminding' about and highlighting the problem. However, caution is advised in sacrificing the patient's sense of autonomy and

individuation by having the family intervene. In contrast to an unstably formed therapeutic relationship, other patients may immediately form an overidealized relationship, at times in the process becoming helpless and overdependent.

2. Diagnostic evaluation

This stage requires a thorough assessment of current cognitive and personality function. It is important to note that patients with frontal-lobe injuries may perform in the normal-range IQ level [12]. A more significant indicator of severity of impairment with frontal injury is the executive function [13], which is essential for the implementation of the cognitive skills in daily living. In the social sphere, assessment centres around social judgement and behaviour, impulsivity, modulation of affect and overall self-observation. In the cognitive sphere, frontal injury may result in rigid and concrete thinking, and poor processing, organizing and planning.

3. Selection of problem

It is our experience that the most important consideration when selecting which problem to treat is prognosis for success. The therapist looks for high motivation and ability to administer strong reinforcement for desired behaviour. One should initially avoid addressing complex, well-reinforced maladaptive behaviours until the therapeutic alliance has been well esablished and a measure of success has already been achieved.

4. Behavioural intervention

Participation of family members or others in the environment (for example in the workplace) to oversee administration of reinforcers may be required. Reinforcers must be strong in terms of content and must be closely linked in time to the target behaviour.

The therapist applies the behavioural interventions in such a manner that maintains a reasonable level of distress. Distress may be increased by magnifying the presenting problem or decreased by relaxation training.

5. Resistance

Resistance may stem from a lack of awareness of the problem, and impaired self-monitoring and self-control. Non-compliance or lack of success with behavioural assignments may indicate a need to structure further the behavioural intervention (perhaps with the aid of others). In contrast, resistance may be a response to difficulty in mourning lost aspects of the pre-injured self. Non-behavioural interventions, such as psychodynamic analysis of resistance [14], or family therapy and group therapy [10] may be effective in working through these resistances.

6. Generalization

This stage is particularly difficult for the frontal-injured patient. Poor abstraction and rigid thought make the process of accommodation very difficult. New behaviours must be artificially applied to different situations with the hope that the patient will gradually grasp the behavioural schema independently of specific conditions.

Case presentations

Two cases treated by the authors will be presented to illustrate the implementation of behavioural psychotherapy in outpatient treatment of patients suffering from the adynamia and disinhibition subtypes of frontal lobe injury.

Case 1

Case 1, a 30-year-old woman, was injured in a car accident at the age of 20. The oldest of three children, she was brought up in an upper-middle-class family. She was an outstanding student and received several academic scholarships. The road accident occurred during her military service, during which she had attained a junior officer rank. According to her anamnestic history, Case 1 had functioned as a well-adjusted, normally developed adolescent.

As a result of the car accident, her father was killed and Case 1 suffered a severe cranio-cerebral injury (CCI) and was in a coma for about 2 weeks. Case 1 suffered a facial injury, including fracture of facial bones and loss of the right eye. Today there is a significant distortion of the face and an artificial eye. On discharge from hospital, she was referred to our institute for assessment and rehabilitation. Results of neuro-psychological testing indicated an overall normal range of intellectual functioning as measured by the WAIS (FSIQ = 96), and indications of high premorbid function.

However, her behavioural presentation was reflective of the frontal disinhibition syndrome. She was compelled to respond to stimuli with little ability to restrain herself. Lacking normal social boundaries, she was highly sexually promiscuous—frequently engaging in sexual relations with complete strangers. In addition, she was inclined to impulsive overeating, temper outbursts and highly irresponsible managing of funds. In contrast, she presented herself in an impressive well-dressed, intelligent manner. However, her disinhibited behaviours caused both friends and family to distance themselves from her and ultimately to reject her. Paradoxically, this rejection resulted in further desperate attempts for social contact, in the form of intimate relations with strangers.

In the first stage of therapy, which will not be detailed, Case 1 was helped to move into her own apartment. This first goal was established owing to the family's difficulty in living with her and Case 1's desire for independence. In addition, she was helped to find volunteer work as a typist in a hospital, a job requiring minimal social interaction.

Although this first stage of therapy, lasting 2 years, was highly instrumental in her achieving independence, Case 1 remained very distressed over her relationships with men and her poor money management. Several attempts were made to treat the sexual promiscuity; however, a sequence of therapeutic failures resulted in damage to the therapeutic alliance. As a result, a joint decision was made to focus on a far more neutral and prognostically more promising symptom, her overspending and poor budgeting. Although Case 1 received a substantial monthly Israel Defense Department income as a handicapped veteran, she was in essence unable to buy items she truly wanted and needed. The timing to treat this area of dysfunction was ripe when her bank began prosecution procedures for loan default. The therapy centred on the establishment of a series of contracts between Case 1 and her mother. The treatment plan was hierarchically structured from complete dependence on her mother to gradually increased independence.

In the first substage, she relinquished all of her monetary control to her mother. This included credit cards, chequebooks and withdrawal rights to bank accounts. Her mother was responsible for payment of all debts and Case 1 received a reasonable weekly allowance for daily expenses. This contract was set for 1 month and on successful management of her allowance was extended for 2 months. These first months were extremely difficult. Case 1 would demand further funds and her mother had to be encouraged not to succumb to her daughter's demands. On satisfactory completion of the month, Case 1 was taken out to a restaurant by her monther on Case 1's remaining funds. In addition, this success enabled Case 1 to negotiate with her bank to terminate prosecution and obligate herself to regular payments. This manner of reinforcement was continued throughout the therapy, allowing mother and daughter to engage in many enjoyable activities and markedly enrich their relationship. This agreement was then extended for 3 more months with continuation of the positive reinforcements—using saved funds for desired objects and activities.

The next subphase of the therapy was begun with a renegotiation of Case 1's contract with her mother. Case 1 was given more responsibility and control over her monetary situation. Her chequebook was returned to her on condition that she confine her use of cheques to preset monthly payments. Case 1 was instructed to keep careful records of her spending which was overseen by her mother. A grand bonus reinforcer was set for successful completion of this treatment subphase—an organized tour through Europe. This was a long-sought-after goal for Case 1, which was finally actualized on compliance with all contract conditions for a 6-month period. Owing to impulsive spending during her tour, Case 1 found herself in the middle of the trip without any remaining funds from her preset trip allowance. Her mother was instructed not to wire more funds. Despite this setback, Case 1 was very proud of her accomplishments in financing an expensive vacation on her own.

Further attempts to progress to new stages of financial independence met with little success. Agreements providing Case 1 with total autonomy continually ended with a series of irresponsible purchases. It became clear to Case 1 and her therapist that Case 1 would have to compromise at a 'partial autonomy' in which mother supervised her spending. In fact, her mother's temporary withdrawal from her supervisory role was experienced as a negative reinforcement, indicating an acceptance of her limitations. In essence, despite her need for supervision, Case 1 experiences a sense of control over her money-management behaviour. Proper budgeting has been in itself positively reinforcing, resulting in a significnt improvement in her quality of life.

Many other goals in the social sphere remain to be addressed. Disinhibited temper outbursts at the workplace are presently being treated applying the same therapeutic approach. Change in her sexual behaviour continues to remain an unrealistic treatment goal.

Case 2

Case 2 presented as a very lonely, unemployed, 25-year-old man. He was involved in a car accident at the age of 11 in which he suffered a severe CCI and remained in a coma for a period of 2 months. As a result of the injury, Case 2 has a right hemiparesis with a marked limp, poor fine motor co-ordination and reduced hearing in the right ear.

Before the accident, Case 2 functioned as a well-adjusted, high-achieving student. After injury, he remained in a regular classroom setting despite consistently failing

his coursework. He experienced himself as different from others but without any detailed insight into his brain injury. In the social sphere, he gradually lost contact with formerly close friends and was unable to develop new friendships. On conclusion of high school, Case 2 entered the army with volunteer status. Here, too, he experienced severe social difficulties. Post-army work experiences failed due to an 'aloof' social presence. Case 2 was distant, bitter and critical.

Neuropsychological testing revealed that despite a normal level of intellectual functioning as measured by the WAIS (FSIQ = 103), Case 2 presented a marked cognitive impairment in the area of executive functioning [13]. His thinking was rigid and perseverative, with difficulties sorting essential from non-essential information and organizing and integrating verbal information. A personality assessment based on projective tests (Rorschach, TAT and figure drawings) and a clinical interview indicated that Case 2 was at a preadolescent maturation age. He had a shallow sense of his own identity, and experienced others as compelling him to do things that were not intrinsically his needs. On the other hand, Case 2 showed no social initiative and seemed apathetic and distant despite intellectualized declarations of wanting friends. The diagnostic summary of the neuropsychological assessment indicated a frontal brain injury of the adynamia type. This diagnosis had marked implications for treatment. Case 2 had been through a series of failed psychotherapies—all of which ended prematurely.

Treatment rationale ascribed the primary source of distress to Case 2's sense of himself in the social sphere and therefore therapeutic interventions should focus on an objective and subjective level of social functioning. Unemployment, another source of distress, would *de facto* be solved as social functioning improved. The adynamic state implied an impaired ability to monitor the frequency and degree of initiating behaviour. Thus, treatment goals were to improve Case 2's capacity to respond to his own internal cues despite adynamic tendencies.

At the onset of therapy Case 2 was extremely tense, in particular during silences. Gradually it became clear that Case 2 frequently felt criticized for not initiating—for not being 'alive' enough. Case 2 was given relaxation training and comforted by the therapist's assurances that he was entitled to not initiate and 'just be'. This first stage of the therapy was crucial in establishing a trusting therapeutic relationship. In the following stage of therapy Case 2 began to express his distress over his social alienation. This period of therapy was held in conjunction with an intensive day treatment programme at our centre. The therapist was thus able to use the milieu setting as a source of social interaction. Case 2 was encouraged to initiate interactions with other clients. Analysis of resistance to the behavioural assignment revealed maladaptive cognitions which reinforced his adynamic tendency. Case 2 was highly critical of others. Finding negative characteristics in others, he then generalized their 'faults' into their overall personality. Case 2 was given a cognitive assignment to degeneralize his criticism of a given individual and simultaneously to find positive characteristics of that individual. Being motivated by his sense of aloneness, Case 2 performed his assignment without resistance. Assignments were hierarchically structured from the initiation of simple social interactions to the formation of meaningful friendships. Astute attention was given to highlighting and positively reinforcing these social interactions to counter the adynamic tendency.

This movement towards others was inherently positive due to his anxiety over being alone. Establishment of a romantic relationship with a girlfriend provided Case 2 with a sense of accomplishment, acceptance and self-worth.

In the next stage of progress in the therapy, Case 2 began studies towards a diploma in warehouse management. In the school setting he established friendships without any cueing from the therapist. Towards the end of a socially and academically successful year, Case 2 experienced himself as apathetic and listless. It seemed that only after several years of progress in the areas of mastery and self-esteem could Case 2 begin to allow himself an awareness of his organic deficits. He realized that only great personal effort enabled him to fill an inner void and function well in society. The struggle against 'adynamic' tendencies would persist interminably.

Discussion

Though these case presentations lack the rigid research methodology of most behavioural research, we feel they reflect the complex and rich clinical reality of psychotherapy. In this vein, the six stages of therapy (described above) are not clear and well defined. Some stages may not be overtly evident. Other stages may repeat themselves or be in a misplaced order. Resistance (stage 5), for example, may appear at any point of the psychotherapy. Assessment is frequently repeated throughout the therapy. The two cases presented indicate a spiral approach; each individual problem or goal which undergoes all the aforementioned stages is built on previously achieved goals.

Despite the organic aetiology of the dynamic and disinhibition syndromes, their presenting problems can be conceptualized in behavioural learning theory in which cognition mediates between stimulus and response [9, 15, 16]. Frontal injury results in an impaired processing of feedback, both environmental and self-instructive. Thus, the link or mediation between the stimulus and response (the feedback and behaviour) in the frontal-injured patient is maladaptive. More specifically, the patient lacks the appropriate sensitivity to feedback. In both the adynamic and disinhibition syndromes, the therapist manipulates the environment to highlight and magnify the reinforcements. An exaggerated reinforcement schedule enables the patient to build up a more adaptive cognitive mediation and thus bring about the desired change in behaviour; increased initiative in adynamia and improved restraint in disinhibition. We see behavioural interventions as one of a host of directive instruments or techniques to build appropriate cognitive mediators and ultimately psychological insight manifested by generalized change. In our opinion, when treating the frontal-injured patient, insight must be preceded by behavioural change. Psychodynamic insight without change in the reinforcement schedule does not address the organic impairment—poor processing of feedback.

This brings us to an associated issue—inpatient vs. outpatient treatment. Though we stressed the higher level of functioning needed for an outpatient service, as can be seen from the case studies the frontal-injured patient is far less independent than the average outpatient psychotherapy candidate. The patient and therapist are reliant on the many environmental settings available—family, work, group therapy, and so on. This dependence is a reflection of neuropsychological impairments not amenable to direct change, which result in the faulty processing feedback, previously described. Deficits in executive functions, rigid and concrete thinking, shallow affect and poor self-observation are permanent deficits with poor prognosis for change. These deficits directly limit the ability to generalize learned behaviours to everyday living. In contrast, we have presented cases in which frontal-injured patients benefited from outpatient psychotherapy. Although both patients are dissatisfied with their progress

and have grave reservations about the likelihood of marrying and raising a family, they both feel that they have markedly improved their quality of life. Thus, it seems that there is a continuum of severity of frontal injury which is parallel to the degree to which the therapy needs to be directive and structured. Inpatient therapy that is most highly structured has the lowest expectation for generalization. Outpatient therapy is less structured and more generalized.

In summary, although outpatient psychotherapy of these patients often requires highly structured and directive instructions, what most distinguishes the therapy from inpatient therapy is the patient's self-motivation to actively improve his or her quality of life.

Further investigation into the treatment of frontal injury should focus on how the different elements of executive function affect the patient's ability to benefit from psychotherapy. Another area for further research is the effect of frontal injury alongside more diffuse brain injury in which (unlike the cases we presented with a normal range IQ) overall intelligence is significantly impaired.

With regard to other types of brain injury, is behavioural psychotherapy the treatment of choice? Are there cases in which insight must precede behavioural change? We feel that the field of neuropsychology continues to develop in the direction of improving our ability to match the type of injury with the appropriate psychotherapeutic intervention.

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