Using Self-Management Procedures and Behavioural Rehearsal to Increase Engagement in Activities of Daily Living for an Adult Living with the Effects of a Brain Injury

by

Melissa Ferguson

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ABSTRACT

The present study sought to examine the effectiveness that three discrete evidence-based behavioural interventions would have on an individual’s engagement in three self-care behaviours/activities of daily living (ADLs). The participant (N=1) was a 45-year-old Caucasian male living with the effects of an acquired brain injury (ABI) who resided in a long-term care facility, and was referred to the experimenter due to his inconsistent engagement and lack of attention to three important self-care behaviours (e.g., bathing/washing, tooth-brushing, and shaving). An experimental (AB) design with three discrete behavioural interventions (Collaborative Goal-Setting, Self-Monitoring, and Behavioural Rehearsal) was utilized. Based on the results from the three intervention procedures, the hypothesis was confirmed. There was a notable increase in the participant’s engagement in ADLs. The ANOVA statistic demonstrated significant differences for two out of three of the self-care behaviours assessed. Overall, the results of this study suggest that the frequency and quality of self-care behaviours/ADLs can be improved in individuals coping with neurological disabilities through the application of behavioural techniques.
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Chapter I: Introduction

In developed countries, brain injury is the leading cause of death and disability in children and young adult populations (Ylvisaker & Feeney, 1998), and the Brain Injury Association estimates that over 2 million people acquire brain injuries in North America each year (Brain Injury Association, 1994). Individuals living with the effects of brain injuries are faced with many challenges post-injury in the realms of social-behavioural functions, language and communication, cognition, and executive functions. For both children and adults, the aftermath of a brain injury can create substantial lifestyle changes to not only their lives but also the lives of primary caregivers and family members. Individuals with acquired brain injuries have routinely reported that their major concern post-injury is social isolation and loss of social contact (Thomsen, 1984). Hence, these problems can create a level of dependence of the survivor on his/her family to meet those needs. Ylvisaker & Feeney (1998) asserted that long-term behavioural and psychosocial outcomes in populations with traumatic brain injuries is largely influenced by the individuals who play important roles in their lives (e.g., family members, support workers, and rehabilitation counsellors). It is important to help people with brain injuries re-establish positive everyday routines and to help them re-gain a sense of control over their lives. When people view positive outcomes as a direct result of their behaviour they tend to be more active during treatment and may gain a larger sense of belief in themselves. According to Bandura (1986), “It is when people possess competencies that beliefs in personal determination of outcomes will create a sense of power” (p. 413).

In order to achieve active client participation in treatment goals, it is necessary to first establish a trusting and therapeutic relationship. Clients’ are more likely to be active participants in the treatment process if they feel that their voice is being heard, desires are being acknowledged, and the overall therapeutic approach is directed toward collaboration and avoidance of power struggles between the client and therapist. Communicating effectively to people with disabilities by being aware of their emotional states and encouraging participation in treatment planning at the appropriate level they are capable of is crucial. Accordingly, using a positive communication style with clients’ can lead to a strong therapeutic bond that can facilitate feelings of trust, acceptance of corrective feedback, and may motivate the client to adhere to mutually designed treatment goals (Ylvisaker & Feeney, 1998). The main objective of this study is to assess the degree to which three empirically supported behavioural principles would have on the participant’s ability to attend to and carry out certain self-care skills.

Rationale

The purpose of this thesis was to implement a behaviourally-focused intervention for a 45-year-old man with an acquired brain injury who had been inappropriately placed in a long-term care facility. The client was lacking in the area of motivation as he had minimal initiative to engage in Activities of Daily Living (ADLs) and at times refused fundamental hygiene care from
staff. The client’s daily self-report of participation in ADLs demonstrated a lack of consistency and involvement that may have been a result of memory impairment or difficulties with initiation. Other supporting evidence for increasing participation in ADLs comes from the client’s appearance; dishevelled hair, lack of nail care, and failure to brush teeth on a regular, daily basis. Consequently, the participant’s poor hygiene and inadequate attention to grooming were hoped to be improved through the application of self-management techniques.

The self-management techniques were employed to improve functioning in self-care skills in a consistent and responsible manner. Teaching the client about the advantages of good hygiene practices and disadvantages associated with poor hygiene were also utilized to further increase awareness and foster self-reliance. Moreover, positively reinforcing the client for performing basic hygiene skills on a uniform schedule (e.g., at the same time and in the same order each day) and providing feedback on performance may be necessary for the maintenance of treatment gains.

Throughout the text, this thesis will refer to the terms ADLs and ‘self-care’. ADLs includes daily tasks such as getting dressed, brushing teeth, toileting, and feeding (Jones & Lorman, 1994). In the literature, self-care has been defined differently by many researchers, but no distinct definition has been collectively accepted. For example, Orem (2001) broadly defines self-care as behaviours that are “engaged in over time, performed by persons in stable or changing environmental settings and within the context of their patterns of daily living” (p.255). Although, one description that has been recognized on a larger scale is that self-care refers to the activities individuals carry out with the intention of enhancing health, preventing disease, limiting illness and restoring a healthy lifestyle (World Health Organization, 1983). The primary focus will be on maintaining regular engagement in the following areas of self-care: bathing, shaving, brushing teeth, care for hair (e.g., grooming and cutting) as well as washing face, body, and hands.

Due to the fact that the participant is high functioning in that he can read, write, and respond to his surroundings, physically and cognitively capable of performing ADLs, and ultimately desires to regain his independence in society, it is ideal for him to be presented with the proper tools to help him succeed. Educating the client about the importance of self-care skills and personal hygiene can be the first step to enhancing independence and positive well-being. It is predicted that through the use of self-management procedures (collaborative goal-setting and self-monitoring), behavioural rehearsal, corrective feedback, and positive reinforcement, a client with a moderate brain injury can learn how to effectively carry out ADLs and achieve a more independent way of life.
Chapter II: Literature Review

Through an investigation of the literature, it was discovered that there is a lack of research on how to increase activities of daily living for the adult population living with brain injuries. The majority of research focused on ADLs in regards to the impact of declining mobility in the geriatric population and their dependency on front-line staff (e.g., registered nurses). Very little literature emphasized the importance of encouraging and motivating individuals living with brain injuries who are ‘able’ to perform ADLs and to take advantage of their motor and cognitive skills while they are intact. On the other hand, brain injury literature stressed the significance of engaging in positive teaching opportunities, collaborating, and providing clients with choice and a sense of control.

In daily life, people from every walk of life are presented with choices in which they have to make decisions and are fortunate enough to have a great deal of freedom. Conversely, life after acquiring a brain injury is different as the ability to make decisions and maintain control over life is often taken away. These restrictions can be inflated by an overly protective caregiver, parent, or staff member and by a concern that individuals with severe brain injuries are incapable of making sensible choices independently (Ylvisaker & Feeney, 1998). Therefore, providing clients with an opportunity to engage in a productive activity of their selection can promote feelings of overall self-efficacy and belief in their capacity to carry out tasks competently (Petrella, McColl, Krupa & Johnston, 2005). Similarly, encouraging able clients to perform personal hygiene routines independently (e.g., tooth brushing), presenting them with choices when creating self-care goals, as well as providing assistance or instruction when necessary (e.g., bathing), can reduce absolute dependency.

The rationale for utilizing behavioural techniques to motivate the participant to enhance self-care skills, such as grooming, washing, and dressing can be supported by empirical literature. For example, Blair (1999) demonstrated that operant behaviour management techniques, such as prompting, shaping, and positive reinforcement, can be employed to effectively improve daily self-care skills in those residing in nursing homes.

Defining Brain Injury and its Impact

Brain injury can be categorized into two main forms; acquired brain injury (ABI) and traumatic brain injury (TBI). To differentiate, ABI is an injury to the brain acquired after birth and is caused from an extensive variety of situations such as external trauma to the skull or internal conditions like stroke, tumour, and meningitis (Ylvisaker & Feeney, 1998). TBI refers to an injury with strictly an external origin and encompasses closed head injuries and open head injuries. For the purpose of this research paper, the term ‘brain injury’ will be used as a generic term to describe brain injuries with onset by non-congenital factors as well as external causes.
Regardless of the severity of a brain injury, the short-term and long-term effects can entail life-changing experiences with regard to behavioural, psychosocial, psychological, and emotional areas of functioning. Even a mild form of brain injury, such as a concussion, can trigger long-standing cognitive problems that can alter one’s ability to perform daily activities (Langlois, Rutland-Brown, & Wald, 2006). In general, the consequences of brain injuries constitute a very heterogeneous area of study because no one individual or brain injury is the same as the other and can differ significantly. According to Seeley and Hutchinson (2006), those with brain injuries have complex and varied needs and the nature of the disability post-injury can involve an interaction of many different problems that need a multidisciplinary approach to rehabilitation. Long-term outcome is influenced by pre-injury factors, injury-related factors, and post-injury factors, including accessibility to early treatment and family supports (Ylvisaker & Feeney, 1998).

Gainotti (1993) proposed three categories of factors to consider with regard to the emotional consequences of brain injury. First, neurological factors are directly related to the understanding and processing of emotions. The fronto-temporal-limbic part of the brain seems to be associated with emotional disturbances, the ventro-medial frontal areas are assumed to play a role in motivation and anticipation, and the right hemisphere is thought to be related to disorders of motivation (Gracey, 2002). Second, psychological factors involve the individuals’ coping style, personality, client’s level of acceptance to the disability, and pre-injury psychological well-being (Gracey). Third, psychosocial factors focus on the impact a brain injury has on the individuals’ social activities and interpersonal relationships (Gracey).

Furthermore, brain injury can also have devastating effects on behaviour. Changes in behavioural functioning post-injury can typically include, but is not limited to, irritability, difficulties with self-regulation of temper, impatience, impulsiveness, anxiety, depression, lack of interests, social isolation, and loss of initiation (Ylvisaker & Feeney, 1998). Generally, the initiation and inhibition impairment goes hand-in-hand with severe frontal lobe injury as this is where most of a person’s executive functioning (e.g., planning, organizing, thinking and reasoning) takes place (Ylvisaker & Feeney). In addition, the frontal lobes are meant to monitor and manage emotional input, and unfortunately are most vulnerable to be effected in brain injuries that are caused by blunt force trauma (Babin, 2003).

The Transition from an Independent Lifestyle to a Dependent Lifestyle

The lifestyle changes that occur following a brain injury pose many challenges for the individuals and their support network. Depending on the severity of the injury, the individual living with the effects of a brain injury may be reliant on others to manage their finances, take
them to doctor appointments, cook their meals, and address other concerns. Making the adjustment from a life in which self-reliance came naturally, to one that has more limitations, can be distressing for both parties involved. This situation can become problematic when an overdependence on one person to provide supports unfolds. The consequences to this kind of dependence can include an increasing reliance as learned helplessness develops, a potential for crisis when the key supporter is not available, and burnout of the support person (Ylvisaker & Feeney, 1998). Frontal lobe lesions have been readily associated with a behavioural syndrome called ‘pseudo depressed personality’, which is characterized by reduced initiation, apathy, lack of drive, loss of interest, inattentiveness, poor grooming, and lack of emotional reactivity (Ylvisaker & Feeney). Therefore, rehabilitation should focus on collaborating with the client to create specific daily routines and positive roles that can give them a sense of control over their lives.

When an adult with a brain injury is admitted to a community assisted living program or is inappropriately placed in a nursing home due to inadequate funding or caregiver burden, it is important for staff to be aware of potential cognitive or physical limitations as well as presenting abilities. If a client is competent and independent in performing practical tasks when they arrive to a care facility, then the proper procedures need to be put in place to foster that self-sufficiency. According to Nightingale (1969), it is best to have the patient engage independently in behaviours that they are capable of doing. Providing individuals with choices and asking about their preferences, as opposed to making assumptions and carrying out certain tasks for them, can help bring control and feelings of efficacy back into their lives. Encouraging clients to be more independent not only enhances a sense of personal control but can also produce feelings of accomplishment (Blair, 1999). Assessing a person’s ability to engage in activities of daily living such as self-care skills will promote a better understanding of areas they demonstrate autonomy in and the ones in which they require more assistance.

The recovery process in brain injury can be complicated and involves many different stages and it is around the middle stages that the impact of the brain injury often becomes evident. The ‘scattered active’ stage is one in which tasks should revolve around self-care and activities to increase attention and concentration, and familiar tasks such as dressing and bathing should be presented in gentle ways to help the individual stay calm and relaxed (Jones & Lorman, 1994). Moreover, the lack of ability to get started at activities may be noticed throughout daily routine tasks (Jones & Lorman). For example, the person may not bathe or get dressed and even when provided with external cues they may not follow through with beginning the task or full completion of it. Encouraging individuals to initiate and perform self-care is a relevant approach as the assessment and prevention of unhealthy behaviours are vital following a brain injury (Coyle & Martin, 2007).

Furthermore, social learning theory (SLT) paradigms, such as Easom’s (2003) model of self-care, can be used to explain the effect that self-efficacy and perceived difficulties have on
engagement in self-care in the adult population. A predictor of whether someone will engage in health-related behaviours relates to their perception of barriers to a particular behaviour and if barriers are low, self-care activities are high (Easom, 2003). It can be assumed that if a ‘path of least resistance’ is available, it will be taken. In conclusion, lack of health information is a notable barrier to self-care among older adults and an effective way to increase awareness is through education, training, verbal persuasion, and counselling (Easom).

The Importance of Creating a Therapeutic Alliance with Clients

The initial therapeutic sessions or behavioural consultations that professionals have with individuals with brain injuries are very crucial because they can set the platform for the future client-therapist relationship. Although the quality of a therapeutic alliance is rarely examined in the behavioural literature, it still plays an important role in the overall outcome of rehabilitation. McGlynn (1990) acknowledged that an individual who is not fond of or distrusts the therapist will be uncooperative with the treatment plans and as a result will not benefit. On the other hand, a client who has a positive attitude toward the working relationship may demonstrate more gains and collaborate more effectively with the therapist. Getting familiar with the client, identifying strengths and weaknesses, developing rapport, trust, and a working relationship are all key factors to understanding where the client is and where they would like to see themselves. As those living with the effects of brain injuries represent a heterogeneous population, it is the therapist’s responsibility to avoid preconceived notions especially those based on word-of-mouth. Doing so may entail looking to the empirical literature, talking to caregivers, family members and other professionals involved in the client’s life who know them best. In order to be a successful contributor in the lives of people with brain injuries during the rehabilitation process, therapists should be accessible to their clients, actively seek information in a nonjudgmental manner, respect the client’s values and opinions, and negotiate treatment plans (Ylvisaker & Feeney, 1998). Also of importance is the therapist’s ability to be comfortable and patient working with individuals who may not remember the material from one session to the next, or may need reminders/cues even during the session (Heilbronner, 1998).

Clients deserve opportunities to learn, share stories and play an active role in the assessment and intervention process, which may, in turn, increase the success of compliance and participation. Throughout the therapeutic process, it is important to obtain the clients’ feelings and opinions regarding how treatment is going for them and to discuss any concerns they might be having. During assessment and treatment phases, it is necessary to minimize distractions, use language that is comprehensible to the client, interact in a familiar setting, reinforce successful communication efforts, respond to their verbal and nonverbal behaviour, and allow appropriate responding/reaction time (Ylvisaker & Feeney, 1998). These are all important in working with clients since they would promote feelings of respect and may enhance self-determination to
succeed. To prevent conflicts or behavioural outbursts, practical steps the therapist can take are to avoid power struggles and placing too high demands on the client that are not likely to be met, as well as re-directing attention to sustain focus on the task at hand.

According to Bordin (1979), the working alliance is a combination of the therapist’s and client’s ability to agree on goals, the mutual identification of steps needed to accomplish the goals, as well as the potential for therapeutic growth and a strong relationship. In a study by Schonberger, Humle, and Teasdale (2006), researchers investigated the relationship between working alliance, compliance, awareness, and subjective outcome of brain injury rehabilitation. After implementing a four month cognitive, physical, and social intervention, the results suggested that the development of a good working alliance is an important factor to the effect that treatment will have on the client and experience of success. Schonberger et al. suggested that a client’s ability to actively engage in the therapeutic process is related to the overall efficacious therapist-client alliance and creating long-term goals that the clients deem as achievable can increase their participation.

**How to Effectively Apply Self-Management Techniques**

Behavioural assessment in the form of interviewing, direct/naturalistic observation, and analogues are functional for establishing the initial identification of target behaviours, and help determine antecedent and consequent functions to behavioural deficits and excesses. It is also important to assess whether the client’s performance problems are caused by a skill deficit or are a function of an environmental contingency or organic problem related to the brain damage. Goldstein (1983) proposed that behavioural therapy and the goals involved should reflect the requirements of the environment itself, and does not focus solely on making the patient a compliant participant in treatment. Therefore, the purpose of implementing self-management procedures to enhance self-care skills comes from the person-centered approach to teach the client the tools that they will need to control and regulate their own behaviour in the future.

According to Miltenberger (2004),

the goal of self-management strategies is to increase the current level of the deficit behaviour so that the positive outcome can be achieved for the person in the future....the person engages in the controlling behaviour to influence occurrence of the controlled behaviour. The controlling behaviour involves implementing self-management strategies in which the antecedents and consequences of the target behaviours or alternative behaviours are modified; these strategies make the controlled behaviour (target behaviour) more likely. (p. 436)
Goal-Setting and Self-Monitoring are both self-management techniques that seem to go hand in hand and, when used appropriately and systematically, can produce desirable outcomes. Collaborative goal-setting is sometimes critical when working with brain injured clients due to the fact that a person’s ability to set realistic goals is directly related to their level of self-awareness and cognitive functioning. A person with low self-awareness and motivation is likely to develop unrealistic goals and the relationship between awareness and motivation has been supported empirically. For example, Fleming, Strong, and Ashton (1998) found “a significant association between self-awareness and motivation to change behaviour” (p. 45). Moreover, self-monitoring is often reactive in that it may result in a beneficial change in the target behaviour that is being recorded. In a study by Blair (1999), experimenters compared the effects that two separate nursing approaches would have on dependent nursing home resident’s self-care ADLs and overall level of self-esteem. The target behaviours included shaving, dressing, combing hair, feeding self, brushing teeth and locomotion. The nursing staff were divided and trained in the following conditions; (1) a combination of educative-supportive system of care and operant behaviour management (e.g., prompting, shaping, positive reinforcement, and resident involvement in treatment planning), and (2) typical nursing care. A main objective of the study was to demonstrate that, by increasing perceived autonomy and control in the environment, the residents’ motivational behaviours and self-esteem could be enhanced (Blair). Just as the experimenters had predicted, the combined educative-supportive system and behaviour management condition encouraged more engagement in the ADLs and increased the residents’ level of self-esteem than compared to the usual nursing care condition (Blair).

Moreover, Barry and Haraway (2005) affirmed that self-management allows facilitators of the technique to also monitor the target behaviours systematically to ensure accuracy in recording and provide or hold back consequences accordingly. In a research review by Holzer (2001), the author postulated that favourable treatment outcomes are likely to occur when the client can understand the rationale for participating in the treatment protocol and when they are active in the goal-setting process. When the clients become habituated to the self-management of their own behaviour, thereafter the facilitator can phase out external feedback and the schedule of reinforcement. Furthermore, empirical studies on goals and feedback indicate that creating goals has performance advantages, goals can raise self-efficacy, and goals with the addition of positive feedback represent an effective motivational strategy on a wide variety of tasks (West, Bagwell & Dark-Freudeman, 2005). Furthermore, behavioural rehearsal or role-playing can be an effective strategy when trying to motivate clients to engage in more adaptive behaviours or strengthen behaviours that already exist in the behavioural repertoire. Casey (1973) explained the principles underlying behavioural rehearsal and described the process in the following way; the client uses action to express himself, receives ingoing feedback and instruction, and is presented with the opportunity to try new behaviours. The components of behavioural rehearsal that are most significant in the learning process involve verbal behaviour, facial expressions, attention/concentration, autonomic arousal as well as cognitions (Casey).
Other behavioural techniques that should be used in combination with self-management with the brain injured population are appropriate modelling of behaviour, antecedent manipulations, verbal, gestural, and visual prompts, and positive reinforcement (Ylvisaker & Feeney, 1998). Ylvisaker & Feeney (2001) caution to avoid the following approaches with clients with brain injury; create confrontation by demanding compliance with a prescribed intervention, organize behavioural and social intervention plans primarily around consequences, and apply a theoretical model or fixed curriculum to intervention.

Examining the Effectiveness of Behavioural Interventions for the Brain Injury Population

In talking about brain injury rehabilitation, Wilson (1993) confidently asserted that behavioural single-case experimental designs should be utilized more frequently to assess the effects of many types of rehabilitation. One of the most important reasons for utilizing a behaviour management program with individuals living with the effects of a brain injury is to reduce the intensity, frequency, and duration of those behaviours that seem to impede the rehabilitation process from occurring. For the most part, behavioural interventions are warranted due to the effectiveness they demonstrate across a number of heterogeneous disorders, behaviours, and contexts. Even in cognitively impaired populations, behaviour management is one of the most effective techniques for managing inappropriate behaviours (Giles, Fussey, & Burgess, 1989). A critical feature of behaviour management is the measurement of the targeted behaviours prior to, during, and following any treatment protocol. Failure to do so may reduce the overall efficacy of the technique used and weaken the conclusions drawn about potential hypotheses and maintaining variables. However, when performed resourcefully, “behaviour therapy appears to be a valuable approach for controlling and modifying the socially inappropriate behaviours of neurological patients” (McGlynn, 1990, p. 423).

In the instances of attention, motivation, and self-awareness difficulties, which can have considerable shortcomings for brain injury rehabilitation, therapists are faced with many decisions about the course of treatment. Some clients may have a low retention span making the retrieval of information difficult and the choice of intervention intensive and time consuming. Others may refuse to participate in the treatment, arrive late to appointments, or may be unaware of the extent of their injuries even though the deficits clearly disrupt their ability to perform everyday routines. Fortunately, behaviour therapy has been applied effectively to individuals with brain injuries including those who are unmotivated to participate in treatment (McGlynn, 1990). Malec (1984) taught an individual with a brain injury how to self-monitor in order to more efficiently attend to appropriate stimuli and regulate inappropriate verbal responses. In this study, the experimenter broke down each target behaviour into correct component responses, taught the participant how to self-monitor the responses, and through behavioural rehearsal the participant was trained to differentiate between the correct and incorrect responses. Overall, the
participant’s conversational skills improved but the author cautioned that the complex behavioural techniques used in this study are most successful with those who have only low to moderate cognitive deficits (Malec).

Moreover, Wood and Eames (1981) utilized two behavioural techniques to elicit productive behaviours in adults with brain injuries. First, the authors used positive reinforcement to reinforce any spontaneous and adaptive behaviours performed by the client. This procedure led to a chain reaction in that a change in one behaviour generalized to changes in other similar behaviours, or those maintained by the same consequences, and allowed new reinforcement contingencies to increase desirable behaviours. Second, the authors systematically broke down behavioural sequences into smaller components and controlled the behavioural components using a token program. Initially, the clients were prompted for each behavioural component and reinforced with a token for acceptable responses. Tokens toward earning a meal were removed contingent on the failure to initiate correct behaviours. Components were eventually grouped together in meaningful units and clients had to engage in higher frequencies of behaviour in order to obtain reinforcement. The overall objective of this study was to have the client engage in the whole behavioural sequence without prompting or reinforcement. Wood and Eames (1981) found that even when the clients were uninterested in earning tokens they did ultimately respond effectively and improved as a consequence.

It has taken decades of experimental research to get to a place in which it is safe to say that behavioural approaches can make a difference in the lives of people living with the effects of neurological deficits. Also a recent trend is the knowledge that individuals with severe cognitive deficits have the ability to learn new associations and skills that may produce new behavioural chains (McGlynn, 1990). When developing a behavioural intervention, one must keep in mind the type of reinforcement that is preferred by a client because not one stimulus will serve as a generalized reinforcer to everyone. Moreover, an important component to consider when creating an individualized behavioural intervention is an inclusive assessment of the client’s cognitive abilities, which can help determine the intervention most suitable for that particular person and problem (McGlynn, 1990). In conclusion, due to the support that behavioural principles can be successful with the brain injured population, as the evidence is available and widespread, the current single-case design is hoped to demonstrate that an individual with a brain injury can optimally improve the skills in his existing behavioural repertoire.
Chapter III: Methodology

Participant

The participant (N=1) in this study was recruited from an outreach community service located in Southeastern Ontario. The community agency provides rehabilitation and long-term support for individuals with brain injuries living in the region. The participant, Mr. Mathews, was referred by a community rehabilitation counsellor due to his lack of attention and consistency in performing self-care routines. Mr. Mathews is a 45-year-old man with a moderate brain injury and epilepsy, who has been residing in a long-term care facility for just over one year. A few months preceding placement in the long-term facility, the participant experienced a serious fall as a result of an epileptic seizure, which caused further brain damage. Therefore, the participant was still considered to be in the post-acute recovery stage. Mr. Mathews was selected based on the following inclusion criteria: had an acquired brain injury for at least one year, received services from the agency in the last year, and was willing to participate in the study and able to understand the conditions involved. The nursing staff exhibited concern for the client’s lack of self-care skills and his tendency to refuse hygiene care, during which he needs assistance due to unpredictable seizure activity (e.g., bathing, shaving).

To obtain the participant’s approval to participate in the study, an informed consent (Appendix A) was given and reviewed two weeks prior to beginning the study, at which time the experimenter and the community rehabilitation counsellor met with Mr. Mathews. The document contained information concerning the counsellor’s and level of education, the purpose of a behavioural approach, the anticipated assessments and interventions to be involved, college and agency supervisors and contact information, the overall benefits and risks of participating in the research study and confidentiality. During the consent process, the participant’s community rehabilitation counsellor was present to ensure comprehension and clarification of the material. The information on the consent form was read aloud to the client using simplified grammar and he was encouraged to ask questions to ensure comprehension of the information. To seek clarification, on the client’s part, the counsellor requested the client to summarize and paraphrase what had been said. The client agreed to participate and signed the document indicating that he understood the presenting information.

Design

A single subject (AB) research design was used to evaluate the effect that three therapeutic interventions would have on the individual across many self-care behaviours. The dependent variable measures included the following self-care behaviours; combing hair, brushing teeth, washing hands, washing face and upper body, shaving, bathing, and cutting fingernails. For the independent variables, environmental antecedent manipulations in the form
of goal-setting, self-monitoring, and behavioural rehearsal were implemented. The sole experimenter during this study was a fourth-year student of the Bachelor of Applied Arts Degree in Behavioural Psychology Program.

**Setting and Materials**

The study was conducted in a large urban long-term care residence that houses approximately 50 residents with ages ranging from 45-90 years. Carrying out the study in the participant’s natural environment was critical for generalization effects to take place after treatment had been faded out. For training purposes, the participant and experimenter typically convened in a private room (lounge room) at the residence with comfortable lighting and temperature and minimal distractions. The collaborative goal-setting phase and certain components of the self-monitoring phase were conducted in the lounge room. The materials required for the goal-setting phase included table and chairs, pen/paper, and goal-planning sheets. For the self-monitoring phase, a self-monitoring data sheet, stickers or pen, and table and chairs were necessary. Alternatively, the behavioural rehearsal phase was conducted in the lounge room for declarative teaching purposes and conducted in the participant’s living quarters and bathroom for procedural learning purposes. The materials required for the behavioural rehearsal phase were hair comb, tooth brush and paste, face cloth, soap, hand towel, nail clippers, and access to a mirror and sink.

**Measures**

**Frequency Data Collection**

Data on the frequency of engagement in self-care behaviours and refusal of certain behaviours during the two weeks prior to the study were obtained from the care facility (Appendix B). The participant’s self-care is routinely observed and documented by the nursing staff on a daily basis and is thereafter put into the participant’s file. This information was used as baseline and intervention data to assess if the treatment variables had an impact on the frequency of the targeted behaviours. Moreover, the baseline data collected by the nursing staff were compared and analyzed with the intervention data.

**General Semi-Structured Interview**

After obtaining verbal and written consent to participate in the study, the participant and experimenter engaged in a 20-minute general semi-structured interview (See Appendix C for
Interview Protocol). Information obtained from this interview included personal meaning of goals (short-term and long-term), perceptions regarding limitations and abilities, pleasurable leisure activities, and behavioural excesses and deficits. During the interview, no feedback was provided to the participant only the use of verbal and nonverbal encouragers was employed to assist conversation. The purpose of this procedure was to learn more about the client’s current level of functioning and help to establish a good, therapeutic alliance early on.

**Patient Competency Rating Scale**

Subsequently, a pre-assessment tool entitled the “Patient Competency Rating Scale” (PCRS; Prigatano, 1986) was used to identify the participant’s behavioural and psychosocial characteristics. The PCRS was implemented with Mr. Mathews and a member of the nursing staff and required 25-minutes to complete the 30-item scale. A patient version of the PCRS (Appendix D) was conducted with Mr. Mathews to obtain information on the client’s perceived abilities to perform a variety of practical, everyday tasks. The PCRS is a scale that consists of 30 items in which clients are asked to rate themselves on a scale of 1-5, with 1 meaning ‘can’t do’ and 5 meaning ‘can do with ease’, with higher self-ratings suggesting more competencies. To ensure reliability and comprehension of the material, Mr. Mathews was asked the questions out loud and after being reminded what each number represented in terms of meaning, he answered in the form of a number. The PCRS Clinician’s Version (Appendix E) was also completed by a nursing staff that knew the client well enough and was familiar with the topographies of his behaviour. The purpose of having both the client and a staff member complete the PCRS was to compare their ratings and compute the scores using the following formula (PCRS patient rating-PCRS staff rating/PCRS patient rating) * 100. This calculation was obtained from a study by Fischer et al. (2004) and proposes that positive values indicate an overestimation of abilities by patients compared to staff ratings, where as negative values denote an underestimation of competencies by patients.

**Procedure**

Contingent on the results obtained from the baseline data and assessment procedures, the intervention techniques were selected and considered practical methods to enhance the self-care behaviours. For this study, the treatment component involved three main phases, **collaborative goal-setting, self-monitoring, and behavioural rehearsal** (See Appendix F for Intervention Procedure Protocol). Each phase entailed an empirically studied behavioural approach and was initiated with two types of learning techniques. First, a declarative learning approach was used in which the material was presented to the subject through discussion and concrete examples to introduce each behavioural technique. Second, a procedural learning process was executed as a
useful strategy to assist the participant’s learning through multiple practice and rehearsal. The time frame for each treatment phase was 30-minutes per day for five, consecutive days (e.g., Monday-Friday). During each treatment phase, the participant was provided with positive reinforcement in the form of descriptive verbal praise contingent on the occurrence of an appropriate response, and was also given daily reminders and verbal prompts concerning the self-care behaviours (e.g., repetition was imperative to use with this client). Moreover, Mr. Mathews was given corrective feedback regarding how he could improve the performance or certain aspects that he may want to work on to be more successful.

The collaborative goal-setting procedure was introduced in week 3 and involved teaching the participant about what goals are, and how to set and achieve realistic, specific, and measurable goals specifically on the topic of self-care skills. After completing the discussion part, the participant and experimenter collaborated to define each self-care skill operationally by identifying each sequence involved. See Table 1 for an example of a self-care definition and Appendix G for full component steps.

Table 1

Component Steps and Instructions for Self-care Behaviour

<table>
<thead>
<tr>
<th>Brushing Teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pick up toothbrush</td>
</tr>
<tr>
<td>2. Wet the toothbrush</td>
</tr>
<tr>
<td>3. Take the cap off the toothpaste</td>
</tr>
<tr>
<td>4. Put paste on the toothbrush</td>
</tr>
</tbody>
</table>

Next, Mr. Mathews was presented with a goal-planning sheet (Appendix H) that required the client to write down the goal, identify the steps to accomplish the goal and potential barriers, and fill in the review section after completing the goal. During this phase, the goal-planning sheets were distributed to the participant every morning for five consecutive days by the experimenter at which time both parties would collaborate to complete the goal-planning for the remainder of the day. However, consistent verbal prompting and encouragement were provided to the client to
assist his goal performance and self-initiated responses. The following day, the participant and experimenter would review the goal-planning sheet from the previous day to discuss any successes or obstacles that were encountered, and to also finish incomplete sections. Writing down the self-care goals each day acted as a cue for him to engage in them, although consistent reminders and prompts were also needed and therefore were given by the nursing staff and experimenter. Initially, the client had some difficulty completing the goal-planning sheets independently during times when the experimenter was not present, but as training progressed the client became more reliable at completing the sheets.

During week 4, the self-monitoring procedure was implemented and shared some similarities with the goal-setting phase in that the participant was described what the term ‘self-monitoring’ meant by providing specific examples. The client was also taught how to effectively use the self-monitoring record. The subject and facilitator collaborated to identify the self-care behaviours that would be most meaningful to monitor and collect data on. Consequently, all of the behaviours were selected due to their social significance and need for improvement. The operational definitions for the self-care behaviours were reviewed to ensure that the participant was aware of when it was occurring, as this would promote a more reliable self-monitoring system. A self-monitoring data collection sheet (Appendix I) was developed by the facilitator and then provided to the client with direct instructions. It is important to note that the participant’s level of cognitive functioning was taken into consideration when developing the recording sheet. Mr. Mathews was supplied with pens and stickers as a way to record data, and consequently the client chose to use the stickers over the pen. The experimenter demonstrated to the client through practice and examples how to self-monitor the self-care behaviours. Mr. Mathews was required to self-monitor using the sheets each time he engaged in one of the self-care behaviours from the time he woke up until bedtime, for five consecutive days. The participant was reminded by the experimenter on a daily basis the importance of self-monitoring, the nurses were encouraged to prompt Mr. Mathews when the client was ineffective at monitoring, and recording, and verbally praise the participant upon successful self-monitoring. Moreover, the nurses did not always facilitate the performance of the self-care tasks but when the nurses noticed unsuccessful monitoring or incompletion of the tasks, they would remind the client to engage in them. To gather the participant’s perspective on treatment gains and progress, he was asked on a daily basis how the data collection was working for him and if he noticed any changes in his ability to carry out the ADLs. Accordingly, he was provided with both verbal praise and corrective feedback based on his responses.

The last treatment component, behavioural rehearsal (BR), was introduced in week 5 and initially comprised of declarative learning in which the participant was explained that BR is a behavioural approach that involves practicing behaviours and skills to identify if they need improvement. Also, the experimenter described that practicing the self-care behaviours will allow both parties (e.g., experimenter and participant) to assess and correct errors that may be
present during the behavioural performance. After reviewing the operational definitions of the self-care behaviours (Appendix G) several times for each skill, and during every session (e.g., the participant’s understanding of the operational definitions was identified when he could paraphrase the definition in his own words), the participant was observed engaging in selected target behaviours. Only a few behaviours were selected for role-play because the rehearsal of some would clearly be inappropriate and unnecessary for the purposes of this study. For example, shaving, bathing, and dressing independently were appropriate for the self-monitoring phase as behaviours are being recorded that others cannot always observe. The behaviours that were chosen to be physically practiced included brushing teeth, combing hair, washing face, hands, and upper body (arms), and cutting fingernails. Rehearsal of each self-care behaviour occurred at least twice during each thirty-minute session, for five consecutive days. This phase was exclusively conducted in the participant’s bedroom and in the bathroom as this was the proper context in which these behaviours naturally occur. Training the client in his natural context can also help to facilitate generalization when the skill building phase is complete. To facilitate the learning process, Mr. Mathews was encouraged to practice the easy behaviours first and then move on to the more difficult ones. The behaviours were rehearsed in the proper context each time and upon rehearsal of the correct behaviour positive reinforcement in the form of verbal praise was provided. Lastly, each self-care behaviour was practiced until it was demonstrated correctly at least a few times.

Incorporated into the treatment phase was the use of psychoeducation and increasing the participant’s awareness to the consequences of poor hygiene (susceptibility to illness), as well as the benefits of good hygiene (prevention of illness). Informational sheets and facts about good hand-washing routines and care were given to Mr. Mathews to highlight the importance of being hygienic. Throughout the entire assessment and intervention process, the importance of developing a strong, therapeutic alliance with the client was adhered to. It became well-known in the initial work with this client that he responded best to people who collaborated with him, showed respect and listened to concerns and opinions. Early on, working to achieve a rapport that communicated trust and empathy was the key to a good working relationship. By communicating respect and providing the client with feedback and guidance, he played an active role in the treatment protocols. Additionally, to promote the maintenance and generalization of behavioural and social gains and further improvements in the area of self-care, the nursing staff and other significant others in the participant’s life were trained how to carry on some aspects of the study. For example, post-intervention the experimenter met with the Director of Nursing of the long-term care facility as well as a few other nursing staff and Mr. Mathew’s mother to review client progress, discuss future considerations and how to maintain any significant treatment gains. It was recommended that the client continue to be verbally praised for independent engagement in self-care behaviours and acceptance of nurses’ assistance when needed, to continue daily self-monitoring of self-care behaviours, and to encourage and prompt
the client on a daily basis. Furthermore, the mediators were provided with copies of the goal-setting sheets as this method of self-management was seen as beneficial for the client’s ability to monitor his own behaviour, not only in regards to the self-care behaviours but also for a wide variety of other behavioural and cognitive deficits.
Chapter IV: Results

Baseline

Based on the nurse’s method of data collection, the client displayed a high rate of refusal in regards to performing the specified self-care behaviours (Table 2). Typically, the nursing staff would approach the client during the morning and evening to ask Mr. Mathews if he had completed the self-care behaviours. If the client had neglected to do so, the nursing staff would then offer to provide the client with hands-on assistance or, if the client refused the help, he would be encouraged to perform them independently. Most of the nursing staff would observe the client to ensure that they were indeed being accomplished. However, it was also observed that the nurses often overlooked following up on whether or not the client completed the self-care skills thoroughly, and the overall frequency and time between each follow up was inconsistent (e.g., follow up may have occurred twice each hour, or once every four hours).

Table 2

<table>
<thead>
<tr>
<th>Timeline</th>
<th>Bathing/Washing</th>
<th>Brushing Teeth</th>
<th>Shaving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>10%*</td>
<td>10%*</td>
<td>0%*</td>
</tr>
<tr>
<td>Week 2</td>
<td>10%*</td>
<td>10%*</td>
<td>0%*</td>
</tr>
</tbody>
</table>

*These percentages are based on data collected from Monday-Friday

Assessment Results

Through use of the general semi-structured interview with Mr. Mathews, it became apparent that he was aware of his surroundings and grasped the reasons for his placement in a long term care facility. The participant’s responses to the questions represented good receptive skills and fair expressive language abilities. On the other hand, the client’s lack of self-awareness occasionally prevented some of the questions from being answered thoroughly. From the beginning of the interview, it was vital to reduce environmental distractions to maintain the participant’s attention and clarity of the material being presented to him. It was also important to use active listening skills and allow enough processing and responding time. It would be reasonable to assume that the 20-minute interview may have facilitated the development of a working alliance in a positive direction and helped to instil trust in the relationship by making the client feel accepted and reinforcing positive communication.
For the most part, it is believed that the client answered the interview questions in an open and honest manner, sometimes disclosing more information than what was required. Overall, it was discovered that the client is aware of the immediate limitations that his disability imparts such as not being able to live independently or without supervision or engaging in previously-enjoyed physical activities. Alternatively, Mr. Mathews did present with a variety of strengths and spoke frankly about the aspects of his life of which he is most proud. For example, during the interview the client appeared to be a friendly and outgoing individual, who even though feels burdened by his epilepsy, still seems able to keep an open mind and looks forward to the future. The client identified that he enjoys meeting new people, can blend in with a crowd easily, and benefits from social engagements. One of the most important pieces of information the client disclosed was that he prefers to make choices and to have choices presented, and to also have control over his life, as opposed to having others speak for him. This was a valuable piece of information because as an involuntary resident in a long-term care facility, it can be assumed that his level of independence and access to choice and control is questionable or, at least, limited.

The patient (Appendix D) and clinician (Appendix E) versions of the PCRS yielded some useful information in regards to the client’s level of self-awareness and the nurse’s perspective on the client’s awareness and ability to perform a variety of everyday tasks. The calculation suggested by Fischer et al. (2004) (described earlier) was utilized to combine the client’s and nurse’s scores \[(104 - 63/104) *100 = 39.4\] and suggests that a positive value denotes an overestimation on the client’s part. Mr. Mathew’s most frequently given answer was a ‘3’ which meant that the client can carry out the task ‘with some difficulty’. Whereas the nurses most frequently given answer was a ‘2’ which meant that it is ‘very difficult’ for the client to carry out particular tasks. It was discovered that Mr. Mathews does have a significant overestimation in regards to his abilities and perceived competencies, which could be directly related to his lack of self awareness and cognitive difficulties. There were considerable differences between the client’s self-report and the nurse’s scores. Specifically in terms of those tasks that involved remembering to carry out important daily tasks, understanding new instructions, taking care of personal finances, scheduling daily activities, and regulating emotional responses, all of which resulted in an overestimation made by the client. The PCRS was of value to this study because it allowed the experimenter to obtain important information from the participant and a nursing staff, and provided the experimenter with a better understanding of the participant’s current level of functioning, strengths, and behavioural repertoire. This scale also demonstrated that the participant was still in the early stages of recovery and dealing with a significant loss of independence, and motivation to a variety of previously-enjoyed activities and productive tasks.
**Intervention**

Based on the results from the three intervention procedures, there was a notable increase in Mr. Mathew’s engagement in ADLs. Throughout the implementation of the treatment phases, Mr. Mathews was a compliant participant who was open and willing to learn new skills and strengthen the skills already ingrained in his behavioural repertoire. Overall, the client responded well to the program goals and the collaborative, therapeutic style of working, which seemed to make him feel a part of the rehabilitation process.

As can be visualized in Figure 1, the participant’s engagement in self-care skills during the baseline phase was very low and in need of improvement. Although, the nursing staff chose to focus solely on bathing/washing, tooth-brushing and shaving, it was viewed as relevant to also focus on cutting nails, hand/face washing, combing hair and dressing independently.

![Graph of frequency of self-care behaviours (e.g., bath/wash, teeth brushed, and shave) during baseline and intervention phases.](image)

**Fig. 1**

Graph of frequency of self-care behaviours (e.g., bath/wash, teeth brushed, and shave) during baseline and intervention phases.
As these behaviours were also occurring at a low rate and were considered important hygienic behaviours to perform on a uniform schedule. During the baseline phase, the trend for all three self-care behaviours seemed to maintain at a low level (M=8%, SD= 8.03). Prior to the implementation of Phase 1 (week 3, collaborative goal-setting), there was a slight upward trend that could be due to the initial appointments the experimenter and participant engaged in where discussion of personal hygiene had occurred.

According to the visual analysis, all three treatment phases had an effect on the targeted behaviours. It is important to note that weeks 3, 4, and 5 involved the intervention phases collaborative goal-setting, self-monitoring and behavioural rehearsal, consecutively. The mean occurrence of the self-care behaviours during each of the three separate treatment phases was 36%, 44%, and 52% for collaborative goal-setting, self-monitoring, and behavioural rehearsal, respectively. As can be viewed in Figure 1, an evident upward trend can be distinguished. The percentage of improvement for all three target behaviours over the course of baseline and treatment can be amounted to a 450% change (44 – 8/8 = 450%). Table 3 outlined the mean and standard deviations (SD) across each self-care behaviour during the baseline and intervention phases. Furthermore, Table 4 demonstrated the overall statistical totals in mean, median, and SD across all self-care behaviours during baseline and treatment. There is also an overall change in means for the frequency of engagement in the targeted self-care behaviours between the baseline and treatment phase.

Table 3

*Descriptive Data for Each Self-Care Behaviour during Baseline and Treatment*

<table>
<thead>
<tr>
<th>Self-Care Behaviours</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bath/Wash</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>0.2</td>
<td>0.42</td>
</tr>
<tr>
<td>Treatment</td>
<td>0.93</td>
<td>0.59</td>
</tr>
<tr>
<td><strong>Teeth Brush</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>0.2</td>
<td>0.42</td>
</tr>
<tr>
<td>Treatment</td>
<td>0.87</td>
<td>0.52</td>
</tr>
<tr>
<td><strong>Shave</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Treatment</td>
<td>0.47</td>
<td>0.52</td>
</tr>
</tbody>
</table>
Table 4

*Overall Statistical Data for Self-Care Behaviours during Baseline and Treatment*

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>8</td>
<td>44</td>
</tr>
<tr>
<td>Median</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>8.03</td>
<td>8.89</td>
</tr>
</tbody>
</table>

To further analyze the data and assess treatment significance, One-way, Between-groups Analysis of Variance (ANOVA) were used for all self-care behaviours. A significance level of .05 and confidence intervals of 95% were used for all statistical tests. First, the statistical analysis for the self-care behaviour of bathing indicated a notable significance, $F(3, 24) = 5.2, p < .008$. Second, the analysis for teeth-brushing also revealed a statistical significance, $F(3, 24) = 3.8, p < .026$. Alternatively, the ANOVA statistic for shaving was nonsignificant, $F(3, 24) = 2.8, p > .065$. The data presented demonstrate significant differences and improvements for the bathing and tooth brushing self-care behaviours. In conclusion, the results confirm the hypothesis for the bathing, and tooth-brushing self-care behaviours (e.g., through the implementation of evidence-based behavioural techniques, a participant with a brain injury can actively engage more consistently in ADLs).
Chapter V: DISCUSSION

The purpose of this experimental case study was to develop and examine the effectiveness that three behavioural interventions would have on the participant’s engagement in daily self-care behaviours. It was initially predicted that through the use of two self-management techniques and behavioural rehearsal, a client with a moderate brain injury would more consistently self-initiate ADLs. The hypothesis was confirmed for two out of three of the self-care behaviours as they were occurring more frequently and on a more uniform schedule by the end of treatment. Overall, the results of this study suggest that the program was successful in teaching an adult male with a brain injury to more thoroughly and consistently carry out bathing/washing and tooth-brushing self-care skills. It can be assumed that several extraneous variables interfered with the overall treatment outcomes. First, the nurses’ approaching style with the participant may have influenced his willingness to comply, and thereby reduced his initiative to perform relevant ADLs, even when provided with the tools. Second, it could be argued that the limited time frame for each treatment phase (e.g., 30 minutes each for five consecutive days) was not ample enough to produce the desired and lasting change for an individual who has severe initiation and memory impairments. Nevertheless, the participant in this case did show gradual improvements in self-initiated ADLs responding (e.g., tooth-brushing, bathing/washing, and shaving).

Strengths

The current research demonstrates a few strengths worth mentioning. First, and most importantly, this study provided an individual living with the effects of a brain injury the opportunity to strengthen practical skills that are typically required in order to live a more independent lifestyle, a meaningful value that the client held very closely. Second and according to the brain injury literature, goal-setting is an important area of short-term and long-term rehabilitation for people with cognitive and memory impairments. Individuals coping with the effects of a brain injury, especially those with self-awareness deficits, typically set unrealistic task-related goals for themselves, and awareness deficits are sometimes linked to lower rehabilitation outcomes (Fischer, Gauggel, & Trexler, 2004). Therefore, after discussing the participant’s current level of functioning and clinical recommendations with the agency’s Clinical Psychologist and implementing both the general assessment interview and PCRS, it was viewed as relevant to incorporate the collaborative goal-setting phase into the treatment protocol.

One major area of the study that proved to have its benefits was providing an accepting framework that aided to encourage the participant’s process of recognizing and adapting to the consequences of the brain injury. Not only did the client obtain the opportunity to develop some
skills that could lead to a more independent and self-sufficient lifestyle, he also had the opportunity to engage in prosocial conversations and reciprocal interaction.

**Limitations**

There are several limitations to this study. First, the small sample size (N=1), and lack of comparison group or additional participants, does not allow the researcher to generalize treatment outcomes to other individuals living with similar disabilities or other populations who may benefit from this type of treatment protocol. Second, a more comprehensive and thorough behavioural assessment should have been implemented prior to the treatment phases to more adequately assess the client’s level of skills and to identify the areas in which he required more training/assistance. Observing the client engage in the self-care behaviours initially, as opposed to relying on the nurses’ data collection, may have further produced behaviour change in a positive direction as it would have allowed for additional antecedent/environmental manipulation or adjustment of the treatment protocol to address the client’s deficits more effectively. Third, due to rotating shifts and the high turnover over of staff, the consistency of monitoring the self-care behaviours, encouraging the participant to engage in ADLs independently, and providing corrective feedback based on behavioural performance is not likely to be maintained. This conclusion can also be made based on the demands and needs of other clients in the nursing home, as well as the participant’s tendency to refuse direct care. Since the client’s care facility had a high turnover of staff, Mr. Mathews was exposed to many different nursing staff each day in which the dynamics of the relationships varied and lack of consistency was demonstrated. Therefore, a staff-training component could have been incorporated into this research study, and may have proved to be an effective way to educate and involve the nursing staff and other significant others in the client’s life more involved in the rehabilitation process. Fourth, the limited duration of the treatment sessions can be viewed as a disadvantage. A longer and more intensive intervention protocol could have permitted additional behavioural gains and advantageous results for the client. Lastly, since the three treatments were separate, and were implemented consecutively, there is a possibility that the behavioural gains viewed during treatment were not a direct effect of all three interventions but instead a “carryover” effect could be attributed to the initial treatment phase. For example, Phase 1 (collaborative goal-setting) could have largely influenced the participant’s behaviour change over the next two treatment phases, phase two could have influenced phase three, and an unanticipated generalization effect may have occurred. Therefore, it is difficult to discern which one of the treatment phases had the most significant effect on the participant’s engagement in the self-care behaviours, or which one had the least treatment significance.
**Contribution to the Behavioural Psychology Field**

This particular research study was a bona fide contribution to the field of Behavioural Psychology in part because it demonstrated that the techniques of behaviour therapy can be an effective and valid approach to managing the behaviours of those living with the effects of a brain injury. Specifically, this case study outlines that the frequency and quality of self-care behaviours/ADLs can be improved in individuals coping with neurological disabilities through the application of behavioural techniques.

After reviewing the brain injury literature, it was found that there is a lack of literature that calls attention to the placement of individuals with brain injuries in nursing home settings and how this placement is not the most practical as it may reinforce the client’s dependency on others and can be counterproductive in terms of appropriate rehabilitation. The appropriate social, behavioural, and cognitive interventions are not typically accessible to those in nursing homes and, with the adult brain injury population, it is crucial to maintain intensive rehabilitation and support throughout the recovery process. Ideally, people living with the effects of brain injuries should be socializing and connecting with others living with similar disabilities.

**Multilevel Challenges**

Several challenges were encountered during the implementation of this research. At the client level, due to the nature of the brain injury the client had difficulty with initiating behaviours. Therefore, further verbal prompting and reinforcement were required during the goal-setting and self-monitoring phase to enhance behavioural momentum. At the program level, one of the most difficult challenges faced with was gathering support from service coordinators, nursing staff, and other individuals involved in the client’s rehabilitation process. The independent nature and transdisciplinary approach of the outreach service demanded a great deal of persistence and assertiveness in order to achieve approval to pursue the research. At the organization level, the challenges that the researcher was presented with included ensuring that the goals and purpose of the research were consistent with the mandate and services provided by the agency, and that appropriate authorization was provided by the program coordinators before implementing any treatment program.

**Recommendations for Future Research**

Future research in this area of study should consider looking at the short and long-term implications that non-elderly individuals living with the effects of brain injuries encounter when they are placed in nursing homes, and/or if they are receiving the appropriate social, and behavioural rehabilitation needed to prosper during the recovery process. Additionally, it would
be recommended that future researchers implementing a similar intervention protocol consider using an additive treatment design (e.g., TR1, TR1 + TR2, TR1 + TR2 + TR3) to evaluate the effectiveness of each intervention. In conclusion, this study can be viewed as a starting point for future research looking at the appropriateness of both the importance of developing behavioural interventions for adults with brain injuries, and helping them re-gain their sense of independence, as well as re-integration into society.
References


Thomsen, I. V. (1984). Late outcome of very severe blunt head trauma: A 10-15 year second


Appendix A: Informed Consent

Dear Mr. Mathews,

I am a student in the Bachelor’s Degree in Behavioural Psychology [BPSYC] program at St. Lawrence College. This four-year degree program is based on a behavioural framework, which has been proven to be effective in developing life skills with a wide range of clients in institutional and community settings. The behavioural approach increases the client’s desirable behaviours through teaching, practice and encouragement. This course focuses on the application of the basic principles of Applied Behaviour Analysis (ABA). ABA is a practice that focuses on the identification and manipulation of relationships between behaviours.

I am currently enrolled in an Applied Thesis course. An applied thesis is an intervention or project that includes a very detailed and focused report about a specific research question or topic. The development of the intervention will include a pre assessment tool entitled the ‘Patient Competency Rating Scale’, a semi-structured interview, and an intervention component involving the following phases; collaborative goal-setting, self-monitoring and behavioural rehearsal. This client-focused intervention will be developed in collaboration with you, the agency’s staff, and team members.

The applied thesis project has been approved by Regional Community Brain Injury Services of Belleville and District and by the agency’s Service Coordinator, Wendy Haddrall. Marie-Line Jobin is my College Supervisor.

The benefits of participating in the applied thesis include (1) learning more about self-planning and the importance of self-care, (2) creating and achieving goals, (3) gaining knowledge about monitoring your own behaviour and (4) engaging in a variety of pro-social opportunities. There are no known risks of participating in the applied thesis.

I would like your permission to implement the intervention/procedures described above. The intervention/project will be developed under the supervision of Wendy Haddrall and Marie-Line Jobin. All information collected will be kept strictly confidential and stored in a private place. Upon request, we will gladly share a copy of a brief report of the intervention and please do not hesitate to ask questions.

If you agree to participate in the project, please complete the form at the bottom of this letter and return it to me as soon as possible. Participation in this project is voluntary and Mr. Mathews may withdraw at anytime. I sincerely appreciate your cooperation. If you would like to receive more information about the applied thesis or have additional questions or concerns, please contact my College Supervisor.

Sincerely,
I, Mr. Mathews, understand and consent to the information on the previous page.

Name: ____________________

**NOTE:** All information identifying you will be removed from any reports to protect confidentiality

_____ I, Mr. Mathews, consent to participate in the intervention/project conducted by Melissa Ferguson.

_____ I consent for the data collected as part of this intervention/project to be put in a report in the college library.

_____ I consent for the data collected as part of this intervention/project to be presented at a conference.

_____ I consent for the data collected as part of this intervention/project to be published in a peer reviewed journal or professional publication.

Client/Guardian Signed: ________________ Date: ____________

Witness Signed: ________________ Date: ____________

BPSYC Student Signed: ________________ Date: ____________

Thank You for Your Support
## Appendix B: Frequency Data Collection

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathed/Washed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1/10 10%</td>
</tr>
<tr>
<td>Brushed Teeth</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1/10 10%</td>
</tr>
<tr>
<td>Shaved</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0/5 0%</td>
</tr>
</tbody>
</table>

| Week 1             |       |       |       |       |       |         |
| Week 2             |       |       |       |       |       |         |
| Treatment          | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Overall |
| Bathed/Washed      | 1     | 0     | 1     | 1     | 0     | 3/10 30%|
| Brushed Teeth      | 1     | 1     | 0     | 1     | 1     | 4/10 40%|
| Shaved             | 1     | 0     | 0     | 1     | 0     | 2/5 40% |

<p>| Week 3 (Goal-Setting) |       |       |       |       |       |         |
| Week 4 (Self-Monitoring) |       |       |       |       |       |         |
| Bathed/Washed       | 1     | 1     | 2     | 0     | 1     | 5/10 50%|</p>
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<th>Activity</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Brushed Teeth</td>
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<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>40%</td>
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<tr>
<td>Shaved</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<td><strong>Week 5</strong></td>
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<tr>
<td>(Behavioural Rehearsal)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bathed/Washed</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>50%</td>
</tr>
<tr>
<td>Brushed Teeth</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>50%</td>
</tr>
<tr>
<td>Shaved</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>60%</td>
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</table>
Appendix C: General Semi-Structured Interview Protocol

1. What is your date of birth?
   - August, 1962

2. What is your best quality/trait?
   - Physical fitness
   - Being able to blend in with a crowd easily

3. In your opinion, what is a goal?
   - Process in which you can set things and live more freely

4. Describe something you used to be able to do but can no longer do due to your injury?
   - Skiing

5. Do you like having to make choices, or do you prefer to have things done for you? (self-control)
   - Prefer choices

6. Describe some activities that are interesting, meaningful and do-able to you?
   - Tennis, coaching, swimming (with difficulty), listening to people, and computer games

7. If you had to create daily goals for yourself, what would they be?
   - Start reading more
   - Do things easier with the epilepsy (e.g., sports)

8. Do you like meeting new people?
   - Yes

9. What would make your current daily schedule more exciting/appealing?
   - If lived alone; in an apartment

10. If you had to, what would be one thing you would change about yourself?
    - Way ‘he’ looks at things (e.g., perception of world and others)

11. Identify one realistic short-term goal and one long-term goal for yourself?
    - Short term: read better
    - Long-term: help people; start a group for people living with epilepsy

12. Tell me a behaviour that you engage in too much?
    - Watching television & laughing too much

13. Tell me a behaviour that you do not engage in enough?

- 35 -
14. What is an activity/task that you would like to add to your daily routine?
   - Exercise

15. Describe a task in your current routine that you don’t enjoy doing?
   - “Nothing”

16. How could someone work with you to help you achieve your goals?
   - Create goals to work towards and discuss them

17. In your opinion, how can we work together to change a negative situation into a more positive one?
   - Talk about things and come up with ideas to solve the problem

18. Is it easy for you to talk to a person when you’re feeling overwhelmed?
   - “Yes”

19. How hard is it to create a solution to a problem?
   - “Not hard”

20. What do you miss most about living on your own?
   - Ability to do whatever I want (independence)

21. What makes you happy?
   - When able to do what you want & people agree

22. What makes you upset?
   - When people act in a certain way as if they are above you

23. Do you have any role models, or people that you look up to?
   - Famous tennis player & mother (e.g., the way she treats others)

24. What gives you the inspiration to do something well?
   - Being able to teach others

25. What is the best thing in your life right now?
   - Organizing & facilitating a group for people with disabilities (client disclosed on a number of occasions that he “ran” a group when he lived on his own for people who had similar disabilities as him).

26. What do you do when you get bored? How do you spend your free time?
   - Read, watch television, or talk on the phone to family

27. On a scale from 1 (least) – 5 (most), how much control do you have over your life?
   - “3”

28. Do you like being provided with choices, or do you prefer people to make decisions for you?
   - Have control over results

29. Is it easy for you to initiate conversations with people (are you a conversation-starter?)
   - Yes
30. Have you ever made a personal goal and worked to achieve it? If so, how did it make you feel when you accomplished it?
   - “Played a game of tennis against a famous tennis player” and “felt great” (Client reported that he did not tell anyone, which makes one question the validity of the story)
31. In your opinion, what is the best rule to live by?
   - Be open and be able to put up with the good, the bad, and the ugly
32. In your opinion, what is the most successful way for a person to change their behaviour?
   - They need to want to, they need the drive and to practice hard.
Appendix D: Patient Competency Rating Scale (Patient’s Form)


Identifying Information
Patients Name: _______________________
Date: September 25, 2007

Instructions
The following is a questionnaire that asks you to judge your ability to do a variety of very practical skills. Some of the questions may not apply directly to things you often do, but you are asked to complete each question as if it were something you had to do. On each question, you should judge how easy or difficult a particular activity is for you and mark the appropriate space.

Competency Rating

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Can’t do</td>
<td>Very Difficult to do</td>
<td>Can do with some difficulty</td>
<td>Fairly easy to do</td>
<td>Can do with ease</td>
</tr>
</tbody>
</table>

1. How much of a problem do I have in preparing my own meals? (answer = 3)
2. How much of a problem do I have in dressing myself? (5)
3. How much of a problem do I have in taking care of my personal hygiene? (3)
4. How much of a problem do I have in washing the dishes? (5)
5. How much of a problem do I have in doing the laundry? (3)
6. How much of a problem do I have in taking care of my finances? (4)
7. How much of a problem do I have in keeping appointments on time? (3)
8. How much of a problem do I have in starting conversation in a group? (5)
9. How much of a problem do I have in staying involved in work activities even when bored or tired? (2)
10. How much of a problem do I have in remembering what I had for dinner last night? (3)
11. How much of a problem do I have in remembering names of people I see often? (4)
12. How much of a problem do I have in remembering my daily schedule? (3)
13. How much of a problem do I have in remembering important things I must do? (4)
14. How much of a problem would I have driving a car if I had to? (2)
15. How much of a problem do I have in getting help when I’m confused? (4)
16. How much of a problem do I have in adjusting to unexpected changes? (2)
17. How much of a problem do I have in handling arguments with people I know well? (3)
18. How much of a problem do I have in accepting criticism from other people? (5)
19. How much of a problem do I have in controlling crying? (5)
20. How much of a problem do I have in acting appropriately when I’m around friends? (3)
21. How much of a problem do I have in showing affection to people? (3)
22. How much of a problem do I have in participating in group activities? (4)
23. How much of a problem do I have in recognizing when something I say or do has upset someone else? (2)
24. How much of a problem do I have in scheduling daily activities? (3)
25. How much of a problem do I have in understanding new instructions? (5)
26. How much of a problem do I have in consistently meeting my daily responsibilities? (4)
27. How much of a problem do I have in controlling my temper when something upsets me? (5)
28. How much of a problem do I have in keeping from being depressed? (2)
29. How much of a problem do I have in keeping my emotions from affecting my ability to go about the day’s activities? (2)
30. How much of a problem do I have in controlling my laughter? (3)
Appendix E: Patient Competency Rating Scale (Clinician’s Form)

Identifying Information

Patient’s Name: _________________________

Clinician’s Name: _________________________

Date: October 10, 2007

How well is clinician acquainted with patient’s behavior?
1. Hardly at all 4. Pretty well
2. Not so well 5. Very well
3. Fairly well

Instructions
The following is a questionnaire that asks you to judge this person’s ability to do a variety of very practical skills. Some of the questions may not apply directly to things they often do, but you are asked to complete each question as if it were something they “had to do”. On each question, you should judge how easy or difficult a particular activity is for them and mark the appropriate space.


Competency Rating

Can’t Do  Very difficult  Can do with ease
To do some difficulty

1. How much of a problem do they have in preparing their own meals? (answer = 2)
2. How much of a problem do they have in dressing themselves? (4)
3. How much of a problem do they have in taking care of their personal hygiene? (3)
4. How much of a problem do they have in washing the dishes? (3)
5. How much of a problem do they have in doing the laundry? (2)
6. How much of a problem do they have in taking care of their finances? (1)
7. How much of a problem do they have in keeping appointments on time? (1)
8. How much of a problem do they have in starting conversation in a group? (4)
9. How much of a problem do they have in staying involved in work activities even when bored or tired? (2)
10. How much of a problem do they have in remembering what they had for dinner last night? (2)
11. How much of a problem do they have in remembering names of people they see often? (3)
12. How much of a problem do they have in remembering their daily schedule? (2)
13. How much of a problem do they have in remembering important things they must do? (2)
14. How much of a problem would they have driving a car if they had to? (1)
15. How much of a problem do they have in getting help when they are confused? (2)
16. How much of a problem do they have in adjusting to unexpected changes? (2)
17. How much of a problem do they have in handling arguments with people they know well? (2)
18. How much of a problem do they have in accepting criticism from other people? (2)
19. How much of a problem do they have in controlling crying? (2)
20. How much of a problem do they have in acting appropriately when they are around friends? (2)
21. How much of a problem do they have in showing affection to people? (2)
22. How much of a problem do they have in participating in group activities? (2)
23. How much of a problem do they have in recognizing when something they say or do has upset someone else? (1)
24. How much of a problem do they have in scheduling daily activities? (2)
25. How much of a problem do they have in understanding new instructions? (2)
26. How much of a problem do they have in consistently meeting their daily responsibilities? (2)
27. How much of a problem do they have in controlling their temper when something upsets them? (2)
28. How much of a problem do they have in keeping from being depressed? (2)
29. How much of a problem do they have in keeping their emotions from affecting their ability to go about the day’s activities? (2)
30. How much of a problem do they have in controlling their laughter? (2)
Appendix F: Intervention Procedures Protocol

Phase 1: Collaborative Goal-Setting

- Involves teaching the participant about what goals are, how to set/create and achieve realistic, specific, and measurable goals around self-care skills.
- When goals are achievable, people are more likely to be successful and to exhibit the desired level of the target behaviour.
- It is possible to influence the likelihood that someone will engage in a target behaviour in the future by establishing a personal goal.
- Goal-Setting involves writing down the criterion level of the target behaviour and a time frame for the occurrence of the behaviour.
- Set positive goals and those in which we feel a sense of achievement when accomplished.

Phase 2: Self-Monitoring

- Involves observing and recording an aspect of someone’s own target behaviour.
- Self-monitoring is valuable when it is not possible for an outside observer to record the target behaviour (e.g., when the behaviour occurs infrequently or only occurs when no one else is present).
- Define the target behaviours and develop a self-monitoring plan.
- Using a data sheet/recording method, record each occurrence of the behaviour immediately after it occurs.
- Record the target period for a set period of time (e.g., one week).

Phase 3: Behavioural Rehearsal

- Look at the self-care skills that have been previously focused on and recorded.
- Ask the client to rate the behaviours from easiest-hardest (create a hierarchy).
- Look at the sequences of each behaviour and create a step-by-step outline on how to perform them effectively.
- Client preparation: Client recognition of the relevant behavioural deficit and willingness to learn a new and relevant behavioural through rehearsal process.
- Selection of a target situation (e.g., client’s bathroom).
- Behavioural rehearsal in the natural setting, which involves the production of behavioural enactments associated with direct instruction and corrective feedback

- Rehearsal of the correct behaviour followed immediately by positive reinforcement (e.g., verbal praise)

- Rehearsal that are partly correct or are incorrect are followed by corrective feedback (e.g., ‘I like how you did....but...in the future you may want to try and do...instead’)

- Behaviour should be rehearsed until it is demonstrated correctly at least a few times.
Appendix G: Component Steps and Instructions for Self-Care Behaviours

Combing Hair

1. Bring the hair comb into the bathroom
2. Go in front of the mirror
3. Wet the comb and start combing to find the right hair part
4. Brush the left, right, top and back sides of hair
5. When finished, come out of the bathroom and put the comb back on top of the dresser

Washing Hands

1. Go into the bathroom
2. Turn the hot and cold taps on with paper towel or a hand towel
3. Wait until the water is warm
4. Wet hands and fingers
5. Pick up the soap and lather for 30 seconds
6. Put the soap back down and begin to wash in between fingers and under fingernails
7. Rinse hands with warm water and turn off the taps with a paper towel or hand towel
8. Dry hands thoroughly and hang the towel on the rack

Washing Arms & Face

1. Bring facecloth and towel into the bathroom
2. Turn on the hot and cold taps to get warm water
3. Lather the soap in hands & begin washing lower arms (from your wrist to elbow)
4. Wash up and down each arm for at least 10 seconds
5. Then wipe off soap excess with a wet cloth and dry with a towel
6. Wet the face cloth and lather soap into the cloth for a few seconds
7. Wash the face with the wet cloth, going all the way around the hairline and down to the chin
8. Rinse the cloth with water and wipe excess water or soap off the face

9. Turn off the hot and cold taps with a cloth and dry face with a dry, clean towel.

10. Hang up the face cloth and towel on the rack

Cutting Fingernails

1. Locate the nail clippers in the top dresser drawer

2. Put a dry towel on the lap to catch the nail clippings

3. Pick up the nail clippers with the left hand on begin trimming nails on the right hand

4. Make sure not to cut too close to the cuticle

5. Clip each fingernail three times

6. When finished, cut the nails on the other hand
Appendix H: Goal-Planning Sheet

**Goal**

What do I want to accomplish?

When do I plan to start (date & time)?

**Plan**

How am I going to accomplish my goal?

**Steps**

1. 

4.
Problems Arise?

1.

2.

3.

Formulate Solutions!

1.

2.

3.

How Did I Do?

Self-rating: (Not Very Well) (Great)

1  2  3  4  5  6  7  8  9  10
Other Rating (Family Member, Nurse, Peer, and Therapist):

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**What Worked?**

1. 

2. 

3. 

**What Didn’t Work?**

1. 

2. 

3. 

**WHAT WILL I TRY DIFFERENTLY NEXT TIME?**

This planning sheet was adapted from Ylvisaker and Feeney (1998, p. 108).
Appendix I: Self-Monitoring Data Collection Sheet

Date: __________________ Name: __________________

*Record each and every time you do the following behaviours by putting a checkmark or sticker in the box.

<table>
<thead>
<tr>
<th>Brushed Teeth</th>
<th>Washed Hands</th>
<th>Washed Face/Body</th>
<th>Dressed Independently</th>
<th>Bathed</th>
<th>Shaved</th>
<th>Combed Hair</th>
<th>Cut Fingernails</th>
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