Running head: ABI-SPECIFIC ANGER MANAGEMENT

Anger Management Training for Individuals with Acquired Brain Injury: A Literature Review

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Abstract

In the field of acquired brain injury (ABI), there are many different components of treatment and rehabilitation that clinicians target. Specifically, anger problems can afflict an individual and impede their functional living if the unsolicited anger problem goes unaddressed. The purpose of the current academic thesis and literature review is to examine anger management programming and find modifications suited to the target population of individuals with an ABI injury. Journal articles and books from various sources were compared to a specific set of inclusion and exclusion criteria. Pertinent studies and books were organized into a summarized table (Appendix A). While there is a shortage of research pertaining to ABI-specific anger-based group programming, information was collected about different components to treatment, including: duration fatigue, homework and assessments, memory recall, therapist delivery and emotional recognition and control. It was determined that further research needs to be completed to better support the specific population of people. In addition, the results concluded that modifications to typically-delivered anger management programming would benefit the ABI community. It is recommended that future research extends the inclusion criteria to incorporate veterans and military personnel into the information-gathering process to acquire more information on a wider spectrum.
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Chapter I: Introduction

Brain Injury

Though they are acquired via many different forms, acquired brain injuries (ABI) can impact a person cognitively, physically, and behaviourally (Ponsford, Sloan, & Snow, 1995). ABIs can occur as a result of a traumatic brain injury (TBI), anoxia, poisoning, an aneurysm, a tumour, a stroke, encephalitis, drug or alcohol abuse, seizure disorders, meningitis, hydrocephalus, hematoma, or vasculitis (Brain Injury Canada, n.d.). A study by Proctor and Best (2019) stated that the prevalence of ABI is more 15 times more likely than spinal cord injury, 30 times more likely than breast cancer, and 100 times more likely than an individual being diagnosed with HIV. Further, more than 50,000 Canadians and 900,000 Americans sustain a traumatic brain injury (TBI) each year (Proctor & Best, 2019). Many individuals who survive an accident or medical complication and who are left with a brain injury require rehabilitation to ameliorate many skills that have been lost or damaged. Cognitively, people with an ABI injury have difficulty with various mental functions including executive functioning (McMillan & Wood, 2017) which includes one’s ability to problem-solve, plan, set goals, multitask, recall details, manage time, and focus. Behaviourally, patients with ABI injuries may display various unwanted behaviours including, but not limited to: perseveration, lack of initiation, social inappropriateness, emotional dysregulation, confabulation, impulsivity, disinhibition, agitation, aggression, and anger dyscontrol (McMillan & Wood, 2017). Much has been written about ABI symptomatology, assessment, and treatment in regard to rehabilitation (Byrne & Coetzer, 2016); however, there is not extensive research on the treatment of anger with this population. Increased levels of anger affect some individuals who have an ABI (Rochat, 2016). In fact, according to Brooke, Patterson, Questad, Cardenas, and Farrel-Roberts (1992), between 11% and 34% of individuals who acquire a TBI experience a new or increased sense of irritability or anger. Anger expressed inappropriately by result of an ABI may generate strained familial ties, loneliness, and/or employment loss (Kim et al., 2007). Thus, anger dyscontrol is often a significant problem in the lives of those affected by ABI injuries.

Anger Management Therapy

Anger management is a widely used form of programming among many clinical populations. Anger management groups have been used to help reduce anger levels in individuals with substance use disorders (Zarshenas, Baneshi, Sharif, & Sarani, 2017), intellectual disabilities (Willner et al., 2013), and post-traumatic stress disorder (Mackintosh, Morland, Frueh, Greene, & Rosen, 2014). Anger management is often delivered through group intervention and may be based on cognitive-behavioural therapy principles (Henwood, Chou, & Browne, 2016). Cognitive-behavioural therapy (CBT) teaches clients about cognitive distortions and the thought patterns behind them; further, it helps clients overcome their frustrating thoughts by deconstructing the thoughts that stem from an altered perspective about oneself (Winegardner, Keohane, Prince, & Neumann, 2016). A meta-analysis research study conducted by Henwood, Chou, and Browne (2016), showed that group-based anger management programs are the most widely used treatment for unsolicited anger. According to Holas, Suszek, Szaniawska, and Kokoszka (2016), administering group-based anger management therapies may be more time and cost efficient when delivered to multiple people in one session. In addition, group therapy also provides clients with social opportunities to perform prosocial behaviour; that is, prosocial behaviour is exemplified by an individual that is supportive and respectful, rather than an individual who is demeaning, dismissive, or indifferent toward other perspectives (Holas,
Suszek, Szaniawska, & Kokoszka, 2016). Anger management is a widely used, and often successful, treatment for unsolicited anger in many populations (McKay & Rogers, 2000). While many researchers working with a variety of different populations have found this treatment beneficial, standard anger management procedures may not be an appropriate treatment for people with an ABI injury. Standard anger management training often involves the teaching of triggers, emotions, sharing and discussion of personal problems, mental and physical reactions to anger, assertiveness, healthy communication, and coping strategies that is often delivered in a group format that incorporates assigned work for participants to complete independently (McKay & Rogers, 2000). Individuals who have an ABI injury may have extenuating behavioural concerns that hinder their ability to control their anger through typical anger management group therapy. For example, people who have an ABI injury often have significant impairments in emotional expression, impulse control, and social judgement (Alderman & Wood, 2013). Those with a brain injury are more prone to disinhibition, fatigue, memory impairment, difficulty planning, and other cognitive impairments (Ponsford, Sloan, & Snow, 1995). As a result, people with ABI injuries may not have the cognitive or behavioural capacity to thoroughly benefit from standard anger management programming. Clients with an ABI injury may forget the content provided from session to session, be unable to remain focused due to fatigue or impulsiveness, or have recurring agitation that does not allow for extensive social interaction in a group setting. Further, clients with an ABI injury may not be able to express what feelings lead to angry outbursts as easily as people without an ABI. People with an ABI may not be able to engage in certain elements of anger management training, which may limit the degree to which they would benefit from such training. Further, individuals who do not learn to manage their anger may make reintegration to society more difficult.

The aim of this systematic literature review is to examine anger management programming and investigate therapeutic factors specific to implementation in ABI populations. This thesis aims to assist therapists in finding an adaptive alternative to standard anger management training and identify ways to better deliver anger management therapy suited for the given population. Furthermore, the researcher will discuss strengths and limitations of the current thesis and model of treatment, as well as recommendations for future programming. Therapeutic factors will be discussed in the literature review portion of the current academic thesis. The literature review will first include general information regarding CBT-based anger management therapy for ABI populations, followed by an examination of duration fatigue. The next section of the literature review will discuss homework and assessments. Thereafter, the literature will explore memory recall and then therapist delivery. Finally, information on emotional recognition and control will be included in the review.
Chapter II: Literature Review

Cognitive Behaviour Therapy Anger Management Group Training for Individuals with an ABI

Cognitive-behavioural therapy (CBT) is an evidence-based therapy that is associated with a warm, non-judgemental, and client-based approach (Evans-Jones, 2011). CBT focuses on identifying and altering automatic thoughts that negatively impact a person’s behaviour (Winegardner et al., 2016). According to the Centre for Addiction and Mental Health (n.d.), CBT is considered a practical, short-term, structured, and goal-oriented therapy, which can be used with a variety of populations including people with bipolar disorder, eating disorder, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, posttraumatic stress disorder (PTSD), schizophrenia and psychosis, specific phobias, and substance use disorders. In terms of length of treatment period, CBT is administered to people without an ABI within 2-4 months (Iruthayarajah et al., 2018) and is usually delivered in the range of 6-20 sessions (Centre for Addiction and Mental Health, n.d.). Sessions may incorporate homework, or between-session work, to further the knowledge on the concepts being examined by participants (Rees, McEvoy, & Nathan, 2005). Specifically, some examples of homework or between-session work include a log, or diary, or personal anger tracking or trigger worksheets that identify specific stimuli that are meaningful to the participant. Altogether, CBT is a promising therapy used to treat a variety of populations.

Anger management can often incorporate a cognitive-behavioural approach. According to the Canadian Mental Health Association (n.d.), anger management treatment may aid participants in determining their personal triggers, anger style, and strategies to deal with anger. Much like CBT, anger management programming has an extensive research base. Anger management is used to help reduce anger in adults and adolescents, including people with substance abuse disorders, people with PTSD, criminal offenders, and veterans (Fernandez, 2013). Participants are often expected to complete anger logs, a self-recorded tool to log emotion and physical reaction to anger-inducing stimuli throughout the client’s daily life, and reflect on them the following session (Rees, McEvoy, & Nathan, 2005). Anger management is also often delivered in groups. Advantages of group-based anger management programming include cost and time efficiency, as well as the collaboration and discussion among therapy participants (Holas, Suszek, Szaniawska, & Kokoszka, 2016).

While cognitive-behavioural based anger management group therapy is certainly well-researched in other populations, scientific research regarding this treatment with the ABI population is lacking. Iruthayarajab et al. (2018) conducted a meta-analysis that targeted CBT in ABI populations; while the researchers only found seven articles that were relevant and met the inclusion criteria, the meta-analysis found that CBT was effective in decreasing external anger. Aboulafia-Brakha and Ptak, (2016) studied the effects of implementing an anger management program with people with ABI using self-measurement procedures. Nineteen people receiving therapy participated in two different groups: the first group (AB Group) engaged in 8 weeks of anger management group therapy followed by 4 weeks of psychosocial brain injury education while the second group (BA Group) engaged in the treatments in reverse order: 4 weeks of psychosocial brain injury education followed by 8 weeks of anger management group therapy (Aboulafia-Brakha and Ptak, 2016). In the study (2016), there were five different points at which four assessments were completed by the client and their families. Using double baseline that proved a functional relationship and a control group focused on psychosocial brain injury education, the results showed that the anger management group therapy with the ABI population
was effective (Aboulafia-Brakha and Ptak, 2016). Specifically, the anger expression sub-scale of the State-Trait Anger Expression Inventory (STAXI) assessment showed improved results only after participants completed the anger management program, but not after the control treatment (Aboulafia-Brakha and Ptak, 2016). It can be speculated that improvement was evident after the anger management group, and not the control group due to participants’ adherence to coping strategies in order to better deal with feelings of anger. While this study demonstrated positive effects of anger management training for individuals with ABI, there is still much to learn about the specific therapeutic characteristics that should be further researched to make CBT-based anger management group therapy suitable and accessible for more clients with ABI injuries. Specifically, the scientific community needs more information on the precise components of anger management training that should be altered to better suit the ABI populace, such as duration fatigue, homework and assessments, memory recall, therapist delivery, and emotional recognition and control.

**Duration Fatigue**

Individuals with an ABI injury often experience physical and mental fatigue, as well as decreased attentiveness (McMillan & Wood, 2017). In fact, post-ABI fatigue affects ranges from 16-80% in ABI populations, which is substantial considering that people without ABI report fatigue levels varying from 10%-18% (Cantor, Gordon, & Gumber, 2013). Interestingly, Cantor, Gordon and Gumber (2013) found that sleep did not have a recuperative effect on fatigue in individuals with ABI. Cantor et al. (2013) described fatigue as mental and physical exhaustion, inappropriate exertion, and the inability to perform tasks; the researchers noted that fatigue should not be associated in whole with sleep problems. Thus, the understanding of the therapy material may be more difficult for this population which may, in turn, limit therapy success. According to Cantor et al. (2013), fatigue is largely misunderstood, left untreated, and difficult to measure in people who have sustained an ABI. Fatigue is a very complicated facet of an ABI injury that may lead to aggression and agitation (Iruthayarajah et al., 2018); which is the very thing people with anger issues would be trying to ameliorate through anger management training.

Many studies that have been conducted to research the vocational outcomes of people who have acquired an ABI injury have shown fatigue to be a common barrier. One particular study (Colantonio et al., 2016) examined various factors relating to individuals with an ABI injury when returning to the workforce. Colantonio et al. (2016) interviewed 116 participants to determine barriers and supports in returning to their place of employment. The two most significant barriers to employment for people with an ABI injury were difficulty thinking and concentrating and fatigue. If people with an ABI injury have difficulty returning to employment, where they are expected to manage their fatigue, it is possible that they will also have difficulty adhering to CBT treatment where they would have the same expectation. Thus, when people experience the requirement of participating in group therapy, fatigue may have the same impact on their success.

According to Iruthayarajah and his colleagues (2018), changing thought processes may take longer for clients with ABI due to their deficits in memory and similar executive functions. In a study by Lu, Krellman, and Dijkers (2016), brief insomnia-focused CBT intervention was administered to three participants to treat their sleep disorders, which are common in people who have an ABI injury. According to Lu et al. (2016) participant difficulties included limited daytime function and excessive napping. The researchers (2016) also noted that people with an ABI injury often experience stressful life occurrences and take medications; both of these factors...
can worsen sleep disorders and fatigue. The researchers (2016) developed a treatment plan, including 4 insomnia-focused CBT sessions, as opposed to 10-20 sessions often delivered to people without ABI. Benefits were observed using a shortened treatment period of only 4 sessions; therefore, this study suggested that abbreviating treatment for individuals with ABI may be an option for mitigating the effect of fatigue (Lu, Krellman, & Dijkers, 2016). Though there are limited studies examining length of therapy sessions for individuals with ABI, it is likely that limiting the length of therapy sessions would be beneficial as this population does not have the capacity to receive therapy for extended periods of time.

Similar to the study by Cantor, Gordon, and Gumber (2013), Hicks, Larkins, and Purdy (2011) determined that fatigue within the ABI population is often untreated and contributes to other issues, including anger. To mitigate the risk of anger outbursts, fatigue management may need to be considered. Fatigue management is a tool some speech language pathologists incorporate into their treatment of communication problems in ABI populations (Hicks, Larkins & Purdy, 2011). Hicks, Larkins, and Purdy (2011) examined common tools speech-language pathologists use to treat clients with an ABI; 13 participants shared their management techniques in a semi-structured interview. The researchers (2011) summarized the qualitative data by intervention structure, client and family strategies, monitoring by the client and therapist, and lifestyle and daily activities. In terms of intervention structure, suggested items included removing physical aspects of therapy to decrease possibility of physical fatigue during therapy, for example: ensuring clients are driven to therapy as opposed to walking, biking, or taking a bus; checking in with clients to ensure they are well-rested; making sure clients have a wheelchair or walker to aid them if necessary; ensuring therapies do not occur at a very active time of day; ensuring that clients are managing their physical fitness; reducing stimuli during sessions; altering communication style; carefully planning sessions; giving short, simple, instruction; slowing rate of speech and allowing space between pieces of information; repeating or re-wording instructions; managing internal and external distractions; controlling environmental variables such as lighting or background noise; keeping sessions brief; and using timetables and visual cues (Hicks, Larkins, & Purdy, 2011). Hicks, Larkins, and Purdy (2011) also identified client and family strategies, including: educating the client and their family using family meetings, handouts, pictures, diagrams, analysis, and direct advice. Further, the researchers (2011) suggested techniques for client monitoring, which included: providing external monitors such as reliable people, notebooks, or recordings to clients with an ABI due to their impaired sense of awareness. Further, the researchers (2011) suggested incorporating a daily schedule for clients to reference, providing breaks, avoiding back-to-back sessions, monitoring physical signs of fatigue, changing or reducing tasks, or ending the session if necessary. Lastly, lifestyle and daily activities were discussed during sessions; these techniques can be applied independently by the person with an ABI injury or with assistance from a support person, depending on the needs of the client (Hicks et al., 2011). In terms of lifestyle, the researchers (2011) examined rest and sleep, patients’ scheduling and planning, activities, diet, and self-awareness. Further, the following items were discussed as potential techniques for people with an ABI injury: carefully planned activities; relaxation techniques; increasing routine and structure; using specific language devoid of sarcasm or inferences; decreasing the amount vocalized at one time; using diaries or starter phrases; excusing themselves from overwhelming situations; and using external aids such as voice recorders, whiteboards, communication boards, or checklists (Hicks, Larkins, & Purdy, 2011). The current research examined articles that studied ABI-specific fatigue and its impact on treatment, as it is important to understand what
can be done to accommodate fatigue in a therapeutic setting so that anger management group therapy can occur. Specific examples of adaptations to traditional CBT-based anger-management therapy that clinicians can implement to take into account fatigue include keeping sentences short and specific, encouraging breaks, ensuring only one person is speaking at a time, avoiding consecutive meetings, and using external aids to support clients.

**Homework and Assessments**

Incorporating homework is a technique used in a vast array of therapies. CBT programming has incorporated homework, otherwise known as between-session learning, into therapy for many years (Rees, Mcevoy, & Nathan, 2005). CBT therapists may provide homework assignments in the form of worksheets, practice-based, and self-monitoring exercises (Evans-Jones, 2011) that aid in providing clients with additional practice in using concepts discussed (Rees, Mcevoy, & Nathan, 2005). Though there are limited resources outlining the efficacy of using homework in ABI populations, there are studies that credit homework as beneficial to typical CBT therapy. For instance, Rees, Mcevoy, and Nathan (2005) conducted a 94-participant study hypothesizing that research completion would predict success in programming. Further, the quality of the completed homework was analyzed. The researchers (2005) found that incorporating homework into treatment bettered assessment scores. Though this was a thorough research study that examined homework in a more specific scope, it did not include participants with ABI. To support the findings of Rees et al., (2005), a more current meta-analytic study was conducted by Kazantis et al. (2018), identifying homework as an efficacious component to CBT treatment; homework assignments were recognized as a positive predictor of outcome in CBT programming. As part of anger management programming, anger logs, diaries, or self-report measures are often tasked to participants in anger management therapy (McKay & Rogers, 2000). While research is limited on such self-report measures for individuals with ABI, incorporating anger logs into therapy has been found to be useful with other populations. In a study including 12 male participants, tantrum-related anger diaries were used with both participants and their caregivers (McKay & Rogers, 2000). The diaries were compared with interviews and self-reported emotion scales (Bull, Oliver, Tunnicliffe, & Woodcock, 2015). The participants in the study (2015) had Prader-Willi Syndrome, which is a separate neurodevelopmental diagnosis from ABI; however, the study is relevant to the current research in that the diaries were useful in collecting behavioural data on inappropriate outbursts. During therapy, psychoeducation was often paired with live activities, examples, or worksheets. Similarly to assigned homework, concepts were repeated to further familiarization with content (Rees, Mcevoy, & Nathan, 2005). Examples of material and tasks included reviewing completed homework, practicing progressive muscle relaxation, body thermometer or stoplight worksheets, and more (McKay & Rogers, 2000). In regard to work given to participants during sessions while treatment is in progress, the same executive functioning deficits are likely to play a role. However, when given in-session work, facilitators are present to keep participants focused and answer questions. Also, memory strain is less likely to be a problem during in-session work, whereas between-session work requires participants to spontaneously engage in homework without assistance or reminders from facilitators.

Research has shown that homework, anger logs, and other assigned work during sessions are advantageous for participants of anger management therapy (O’Neill, 1999). However, when a client has a brain injury, there are certain factors that may be obstacles to their ability to use the tools taught in anger-management therapy. For example, executive functioning skills that allow
people to problem-solve, plan, set goals, multitask, recall details, manage time, and focus are often impaired as a result of a brain injury (McMillan & Wood, 2017). It is these same skills that are needed to effectively complete work during therapy groups as well as outside of group sessions. If one’s ability is impaired in any of the executive functioning areas then the ability to perform goal setting, to recall and focus on content, to efficiently manage time, and to apply the skills learned in training in real world situations will also be compromised. In addition, participants would be expected to recall the fact that they have homework to be completed for the following week; thus, a limitation to homework completion is often impaired memory (McMillan & Wood, 2017). There is more research needed to identify ways to accommodate for cognitive impairment in relation to ABI-specific anger management therapy.

In addition to assignments pertaining to content, assessments are often also provided during CBT sessions with a purpose of evaluating the participant’s learning (O’Neill, 1999). Further, assessment measures also objectively prove the program’s efficacy by comparing the baseline levels with scores post-treatment (O’Neill, 1999). Research on assessments specific to ABI populations are limited, however the State Trait Anger Expression Inventory 2 (STAXI-2) has been used frequently in anger management therapies in many clinical and non-clinical populations (Spielberger, 1999; Lievaart, Franken, & Hovens, 2016). According to Spielberger (1999), the STAXI-2 assesses the differentiation of anger through state anger, trait anger, and anger expression and control and has been repeatedly validated (Deffenbacher, Oetting, Thwaites et al., 1996; Quinn, Rollock, & Vrana, 2014; Lievaart, Franken, & Hovens, 2016). Though the STAXI-2 is a comprehensive assessment, it is not ABI-specific and it is used with many other populations of people (Lievaart, Franken, & Hovens, 2016). Therefore, ABI-specific anger management ideally should be accompanied by ABI-specific assessments to better comprehend the cognitive, physical, and emotional progress and capability of the specific population. For example, if a typical anger management assessment includes questions about physical state while experiencing a heightened state of anger (i.e. shaking, balled fists, twitches, etc.) and a person who has acquired a brain injury developed physical concerns such as these due to their injury, the assessment would not account for their injury and would therefore be invalid for this population. Similarly to the delivery of assigned work, ABI-specific clients may have difficulty completing an assessment due to their often diminished executive functioning (McMillan & Wood, 2017), inhibiting their ability to remain focused, recall questions, or complete assessments in an appropriate amount of time. Like many ABI-specific factors relating to anger management therapy, there are limited appropriate assessments for this population available to clinicians within the scientific community.

**Memory Recall**

Memory is a very important cognitive function in all people. When memory is impaired, like it often is in people who have an ABI, functional challenges present in everyday life (Levin, Shum, & Chan, 2014). Memory, connected to executive functioning located in the frontal lobe of the brain (McMillan & Wood, 2017), can help someone remember important dates, times, locations, routes, and people in an individual’s life. Memory problems may vary to different degrees and also be different in nature. For example, types of memory potentially affected by brain injury include short or long-term memory, memory of the acquisition of the brain injury itself, and specific types such as implicit memory, procedural memory, and prospective memory. Implicit memory is defined as one’s automatic memory to the things without thinking about them (Mancia, Mauro, 2006). Procedural memory is defined as recalling memories of how to perform
procedures like walking or talking (Squire, 2004), whereas prospective memory is defined as remembering to perform a future task at a specific time (McDaniel & Einstein, 2007). Regardless of the type of memory affected in people with ABI, challenges associated with memory lessen the likelihood of community reintegration (Levin, Shum, & Chan, 2014). Memory challenges may also impair the success of participation in therapy; participants with memory concerns may forget session time, content of sessions, supplies needed for therapy, or their rapport with facilitators and group happenings.

External aids such as notebooks, alarms, or technology support people who have memory challenges post-injury. Encouraging the adaptation to memory impairments in ABI populations is beneficial in several regards; for example, memory aids develop the autonomy of the person with ABI and relieve caregiver burden (Bos, Babbage, & Leathem, 2017).

Typical memory aids include calendars, reminders, and agendas. Traditionally with ABI populations, memory notebooks have been used to allow people to recall daily activities; whereas more recently professionals in the ABI field are implementing more technological-based interventions (Bos, Babbage, & Leathem, 2017). While clients had difficulty referring to memory notebooks, smartphones are used as a more individualized, natural, and easy tool to manipulate (Bos, Babbage, & Leathem, 2017). The cost of buying and/or teaching people technological assistance outweighs the cost of extensive long-term services needed if cognition and memory do not improve (Bos, Babbage, & Leathem, 2017). In a study by Bos, Babbage, & Leathem (2017), nine males with a TBI within two years prior to the study used smartphones to assist with memory improvement. All participants learned to use the smartphones, and six were reported to use this instrument as a memory tool (Bos et al., 2017). Though this study had a limited sample size and participants who lived independently and were not directly observed, it is still a notable study due to its research of memory aids an ABI population. Another study was completed using an augmentative memory system called Mymemory (Chang, Hinze, Bowen, Gilbert, & Starkey, 2018). The study implemented Mymemory with six adults with ABI and using an ABAB reversal design, researchers determined that improvement in well-being, memory function, and autobiographical memory were reported by participants and their caregivers (Chang et al., 2018). The previously mentioned studies validate the use of external aids in ABI populations to compensate for memory challenges. While aids are useful, it has also been found that group therapy is useful to support ABI patients with their memory (Leśniak, Mazurkiewicz, Iwański, Szutkowska-Hoser, & Seniów, 2018). Leśniak, Mazurkiewicz, Iwański, Szutkowska-Hoser, and Seniów (2018) compared no therapy, individual therapy, and group therapy memory-based programming to determine which delivery system fostered the participants’ ability to retain the most content. The treatment itself was comprised of psychotherapeutic cognitive and memory-based sessions (Leśniak et al., 2018). The researchers did neuropsychological testing and administered the Rivermead Behavioural Memory Testing before treatment, following treatment, and during a follow-up assessment. While both individual-based and group-based treatments led to improvements in memory ability via assessment, only the group treatment reported significantly improved results after therapy. Group therapy may have been advantageous for participants due to communications and idea-sharing among participants. While all participants in the study had an ABI, it did not implement cognitive-behavioural or anger management; however, the study does exemplify the importance of group therapy and the impact on memory. Similarly, Thickpenny-Davis and Barker-Collo (2007) implemented an 8-session group therapy program pertaining to memory and cognition psychoeducation. In the study (2007), pre-treatment, post-treatment, and follow-up results using
the *Weshler Memory Scale-Revised* indicated that the group was effective in increasing memory education to the ABI population. Group therapy may have assisted participants in comprehending the psychoeducation behind memory and ABI-induced impairment, as well as finding alternative strategies to compensate for memory deficits. It is possible that the sharing of ideas among group members, and the ability to have questions answered is the reason for the success of group therapy. While this research did not use a cognitive-behavioural therapy approach, nor did it relate to anger management; it again demonstrates the impact group type therapy can have on memory ability in the ABI population.

**Therapist Delivery**

Delivery of content by the therapist is a key characteristic in ABI-specific anger management group therapy. As previously mentioned, executive functioning skills are often impacted through brain injury and inhibit one’s ability to problem-solve, plan, set goals, multitask, recall details, manage time, and focus (McMillan & Wood, 2017). If these skills are impaired in a person who has an acquired brain injury, completing seemingly simple tasks of therapy, such as filling out worksheets, paying attention, focusing within group, and applying the content to one’s own life will become more daunting and effortful for the individual, potentially affecting willingness to attend to the material. A therapist who can accommodate for these challenges may shape a client’s success in the programming.

In any therapeutic relationship, the presentation of the therapist as well as rapport-building is important. According to McMillan and Wood (2017) therapists working with people with impaired cognition should present the following qualities: engaging, supportive, trustworthy, respectful, understanding, warm, non-judgemental, and collaborative. Facilitators should not attempt to rush improvement if is not at a seemingly quick rate, nor should they be confrontational as some anger is expected (McMillan & Wood, 2017). A therapist delivering anger management should be behaviourally trained with experience facilitating cognitive-behavioural therapy groups. While research pertaining to CBT with neurologically typical people is flourishing, brain-injury-specific CBT has not been researched extensively (Khan-Bourne & Brown, 2003). According to Khan-Bourne and Brown (2003) while CBT is usually well-structured, it is also dynamic and collaborative; therapists should consider their approach and try to accommodate cognitive impairments while keeping the core CBT constructs consistent. Therapists delivering anger management treatment should know the differences between anger, assertiveness, aggression, and agitation (O’Neill, 1999). They should have an understanding of typical behaviours within the ABI population through clinical practice, and should be assertive when dealing with challenging behaviours. Therapists should deliver information in a simple and repetitive manner to account for deficits in executive functioning (McMillan & Wood, 2017). Further, the therapeutic technique of summarization would keep participants focused in addition to the purpose, which is to communicate empathy (Khan-Bourne & Brown, 2003). There is a vast amount of literature pertaining to the use of concrete versus abstract wording with people with ABI (Papagno, Martello, and Mattavelli, 2013). Therefore, therapy facilitators should be considerate in the way they deliver examples during group sessions. For example, therapists may consider spending more time focusing on the physiological components of anger, such as sweating or increased heart rate, versus other thought-based techniques.

As previously mentioned, an intensive intake research would need to be completed prior to commencing group therapy with this population. Participants should have moderate competencies in concentration; memory to recall content, dates, and people involved in therapy;
motivation to participate in therapy; verbal capacity to express themselves in therapy; and insight to apply content to their own lives. The facilitator would likely be responsible for grouping participants. It is known that people with ABI injuries are non-homogeneous, so mixing different participants is a critical process that should be closely considered (McMillan and Wood, 2017). For example, a clinician may not want to select two participants who are very vocal and disinhibited to join the same group. In addition to a delicate intake process, facilitators would also need to compile members of a multi-disciplinary team to gather and present information (McMillan and Wood, 2017). There are certain core components of therapist delivery, such as rapport and therapist characteristics, that apply to all treatment populations. However, specific anger-management group therapy delivery techniques have not yet been studied to the researcher’s knowledge. More research needs to be completed on individual factors of therapeutic delivery of anger management for ABI populations.

**Emotional Recognition and Control**

Identifying and expressing emotions may be challenging for people with brain injuries; further, it may be difficult for people with brain injuries to understand emotions in other people (McMillan & Wood, 2017). Clients with ABI injuries may communicate in loud or flat tones (Ponsford, Sloan, & Snow, 1995) or in ways dissimilar to social norms, sometimes contradicting their current emotion (Ponsford, Sloan, & Snow, 1995). Emotional problems, such as depression and anxiety symptomology, often present after a brain injury occurs causing major disability in the lives of those affected and often leave physicians uncertain of how to most effectively intervene (Shields, Ownsworth, O’Donovan, & Fleming, 2016). Shields et al. (2016) noted that the traditional method of determining an emotional diagnosis, through diagnostic statistical analysis, is not valid with the ABI population as it is tailored to the general population. The study (2016) found depression, anxiety, and global distress characteristics in 50 patients with an ABI injury. Further, the study (2016) completed neuropsychological testing and questionnaires pertaining to the impact of emotions post-injury with the participants; the results suggested that participants identified with two main factors of emotional distress: threats to self and emotion dysregulation. While the research conducted by Shields et al. (2016) was not anger-focused, it did contribute factors for future study in people with an ABI. The emotions of someone with an ABI may be more intense, dissimilar to norms, and more difficult to identify post-ABI; further, the control of emotions is also challenging in ABI populations (McMillan & Wood, 2017). That is, clients who have an ABI injury are also prone to disinhibition, emotional lability, and impulsivity (McMillan & Wood, 2017). As a result, clients with an ABI may have limited ability to identify, control and express emotions in an appropriate manner (McMillan & Wood, 2017). According to McMillan and Wood (2017), anger management therapy assists participants in accurately identifying negative thought patterns, learning and discussing triggers to anger post-ABI, and finding coping strategies. It may be more difficult for brain injury survivors to pinpoint problems in their thinking patterns that impact their feelings, which can cause frustration and lead to angry outbursts. A recent case-study examined emotional recognition and response in an individual with a severe TBI (Rochat, Manolov, Aboulafia-Brakha, Berner-Burkard, & Linden, 2016). Rochat and his colleagues (2016) implemented two interventions that attempted to decrease intensity and frequency of anger outbursts by first focusing on the improvement of recognition and expression of emotions then secondly prompting self-regulation. Self-regulation included psychoeducation, strategizing techniques, relaxation training, assertiveness training, and a review of the participant’s daily life. Interestingly, the study incorporated testing of faces
expressing different emotions, eye tracking, and self-monitoring (Rochat et al., 2016). The intervention package tested in this study was successful in reducing anger in the participant and clearly demonstrated the efficacy of self-regulation practices used in the context of anger-management therapy (Rochat et al., 2016). Therefore, Rochat et al. (2016) proved that teaching people with ABI the ability to first recognize emotion objectively and then identify emotions in themselves can decrease anger levels. While Rochat et al. (2017) have made contributions to the scientific community in regard to emotional concerns and anger reduction; there are other problems that may present, especially within a group setting. Other issues that participants might experience include being triggered by the communication of the group, irritation of other group members, frustration with facilitators, expectations of the participant themselves, and discussing personal information on sometimes volatile history. Normalizing negative emotions, disinhibition, and impulsivity post-injury is crucial in anger management group therapy, as this will assist clinicians in targeting triggers and typical anger responses. Clinicians should identify any potential problems before facilitating groups in order to mitigate risk. It is also important to have professional peer support available to be able to consult another professional should a problem arise.

Professional providing CBT for people with ABI need to consider how to deliver therapy accounting for a variety of potential barriers, including: duration fatigue, memory recall, therapist delivery, homework and assessments, and emotion regulation and control. The literature demonstrates that CBT is effective; however, certain modifications should be applied to better suit the ABI populace.
Chapter III: Methods

Systematic Literature Review

A literature review to support the hypothesis included a variety of sources, including: theoretical books, online websites, and peer-reviewed scholarly journal articles. The literature review was systematic in nature. The thesis first examined the history and efficacy of CBT, typical anger management, and group therapy through research of previous interventions, and then examined key techniques and approaches used in successful typical anger management programming. The research delineated various components of ABI-specific anger management therapy, including: duration fatigue, homework and assessments, memory recall, therapist delivery and emotional recognition and control. The author then determined limitations and strengths of the thesis and material collected, and recommendations for future research and programming.

Books

Books included in the literature search were from the author’s own possession, a rehabilitation book collection from an ABI rehabilitation facility, and acquired from a lead clinical psychologist of ABI rehabilitation. Books were read in detail if the title or an item on the table of contents pertained to the research topic. Specific search terms included “ABI”, “acquired brain injury”, “head injury”, “TBI”, “traumatic brain injury”, “anger management”, “CBT”, “cognitive behavioural therapy” and “group therapy”. Books utilized did not have a publication year cap. Books were also utilized to provide details on general principles of CBT, ABI treatment, and group therapy.

Peer-reviewed Scholarly Journal Articles

Peer-reviewed scholarly journal articles were collected using the EBSCOhost databases including CINAHL with full text, MEDLINE, ERIC, Military and Government Collection, PSYCArticles, PSYCbooks, and PSYCinfo as well as articles sent by the lead clinical psychologist of an ABI rehabilitation service, originating from the University of Ottawa databases. The lead clinical psychologist sent the researcher key articles to use in the literature review. Key search terms included “TBI”, “Brain injury Anger Management”, “traumatic Brain Injury” “Anger Group Therapy”. Specific search terms, including “Memory”, “CBT Homework”, “Anger Log”, were utilized; these terms were searched based on the specific area of the literature review that was being developed. Peer-reviewed scholarly journal articles were viewed in full if there was access to the full PDF and if the title and abstract pertained to the research topic. The thesis included a Summary of Articles (Appendix A) which includes general research and findings.

Inclusion Criteria

Studies involving anger management therapy in other populations were included in the literature review to provide background information on current research. Studies were reviewed if they included participants with ABI resulting from the following diagnostic criteria: traumatic brain injuries, anoxia, stroke, encephalitis, aneurism, alcohol/drug use, poisoning, tumour, infection and/or disease. All treatment settings were included in the literature review. All countries were included into the research, as variation in language and health care systems are insignificant to this study. Only articles written in the English language were included in the literature review. The study was examining the adult ABI population and therefore research with
participants below the age of 16 was excluded. Patients with dementia and patients with an ABI injury may present with similar behaviours; however, various abilities decline in patients with dementia whereas various abilities improve and/or plateau in patients with an ABI. Due to the difference in support and outcome, studies involving clients with dementia were excluded from the scope of research in the current thesis. There are many studies pertaining to veterans who have a brain injury, Post-Traumatic Stress Disorder (PTSD), and anger concerns. However, because of the prevalence of co-occurring PTSD and its impact on anger in military personnel with ABI, research regarding their anger management programming was excluded from the proposed thesis. The references in the CBT-based anger management group therapy in ABI populations section were exempt from the inclusion criteria as they provided general information on specific anger management therapy in ABI populations.

Summary of Articles

A Summary of Articles (Appendix A) was included in the current thesis. The Summary of Articles is presented in table form, summarizing the information from each relevant study. Studies are displayed in the order that they appeared in the literature review. Information included in the summarized table is as followed: Study title, participants, methods, results, limitations, and strengths. Background references are also included, but with limited detail as the purpose of the Summary of Articles is to serve as a method of quick access of the research examined through the current thesis.
Chapter IV: Results

The current section outlines the summarized findings of the compiled literature through each chapter of study. Further, highlighted evidence and critical information derived from the literature will be identified. In general, data was retrieved from a total of 34 references that were academic journal- or book-based in nature. Two website-based references were utilized for general information regarding brain injury etiology, CBT treatment characteristics, and prevalence statistics. The scope of research includes hospital settings, rehabilitation service settings, and community settings. A range of sample sizes were included ranging from a single-case study to over one hundred participants.

The CBT-based anger management group therapy in ABI populations section in the literature review included eight references. The research explored CBT in full, examining key principles, neurotypical base rates, and therapeutic characteristics. Anger management goals, successful populations, and the use of a group therapy approach and its benefits were explored. In addition, there was limited research found that included all of the following components: CBT, anger management, group therapy, and ABI populations. In fact, only one article included all components (Aboulafia-Brakha and Ptak, 2016); however, ABI-specific characteristics were not discussed in detail in this study. As previously mentioned, the references utilized in this section were exempt from the inclusion criteria. This information was used as a base to explore the current research into the characteristics of ABI-specific treatment.

The section of the literature review dedicated to duration fatigue in ABI populations and its implication for therapy included six references in total. The articles and books in this section examined the prevalence and symptoms of fatigue in ABI survivors and fatigue’s impact on therapeutic treatment. In addition, the section outlined clinician tactics to better accommodate the effects of fatigue.

The following section of the literature review, which focused on the delivery of homework in ABI groups, included ten resources. Multiple articles determined that the use of homework increased the likelihood of effective treatment in neurotypical populations (Rees, Mcevoy, & Nathan 2005; Kazantzis et al., 2018). In addition, the research commonly suggested that anger logs have traditionally been used in neurotypical populations to decrease anger management therapy. A key point to homework delivery is that it may better familiarize clients with the content; thus, the content repetition and practice may benefit this populations’ memory impairments (Rees, Mcevoy, & Nathan, 2005). Following the articles pertaining to homework or anger logs, assessments were explored. It was determined that, to the researchers’ knowledge, there is not a specific anger management assessment directly pertaining to ABI aggression and treatment. However, the STAXI-2 (Speilberger, 1999) is empirical and often utilized for anger assessment.

The section of the thesis examining memory included nine references. Specifically, the memory portion identified types of memory, as well as memory post-ABI and its implications for reintegration into the community. A variety of memory aids were discussed. In fact, recent research suggests that technology is a beneficial memory aid in ABI populations (Bos, Babbage, & Leathem, 2017). Psychoeducation regarding cognition was also a notable topic within the research because group therapy may have assisted in a more comprehensive understanding of the material through questions and other member’s contributions’ in therapy.

The therapist delivery portion of the literature review analyzed four articles. Rapport, therapeutic qualities, therapist response to anger, knowledge, communication techniques, and the use of concrete versus abstract examples were explored in this chapter. The literature suggests an
extensive intake process is a critical aspect of a therapist’s role to ensure there is good cohesion amongst group members. The assistance of a multi-disciplinary team is also an important component of therapist delivery (McMillan and Wood, 2017).

Finally, the last section of the literature review examined social effects, depression, anxiety, impulsivity, emotional lability, and self-regulation. It included four references. It was commonly found that people who have experienced brain trauma can be prone to emotional problems (McMillan & Wood, 2017; Ponsford, Sloan, & Snow, 1995) which can be detrimental to interactions with others in a social setting. Naturally, the emotional and social concerns presented after brain injury would logically be difficult to manage in a group setting, especially when discussing anger. However, there was limited research on anger management therapy in ABI populations that examined emotional control and regulation. More research is needed in this specific area of study.
Chapter V: Discussion

The current thesis is an organization of academic literature exploring how to better deliver therapy to individuals with an ABI injury who are simultaneously dealing with anger problems as a result of their injury. Anger management group therapy has been effective for a variety of populations (Segal, 2003), but there is a gap in research regarding the use of anger management group therapy for individuals with an ABI. Potentially, the reason for the lack of research and development of anger management programming for this population may be due to a variety of factors, including: duration fatigue, homework and assessments expectations, memory recall, therapist delivery, and/or emotional recognition and control. The importance of the current research is to assist in identifying the best possible delivery of treatment for people with brain injuries; therefore, it is important to see if any modifications can be made to effectively treat anger problems despite any cognitive, emotional, or physical issues that result from a brain injury. As mentioned, there is not a definitive answer in the research that this type of programming is effective for the given population, so it was important to compile and summarize a variety of articles in order to form a conclusion. The inclusion criterion is quite broad; the reasoning for the extensive guidelines is largely due to the limited research on ABI-specific anger management characteristics of treatment. This research contributes to the field of behavioural psychology because there was very little research about anger management group therapy in ABI populations. The current research ameliorates the gap in research by identifying the research available, noting the lack of literature, and developing suggestions for future treatment based on various barriers to treatment for individuals with ABI.

Strengths

There are multiple strengths to this study, including: the five different aspects of literature examined, the inclusion and exclusion criteria, and the broadness of the topic due to the limited research in one area. As stated previously, the current thesis examined duration fatigue, homework and assessments expectations, memory recall, therapist delivery, and emotional recognition and control. These are very different components to treatment that relate to the emotional, physical, social, and cognitive issues an individual with an ABI injury might have. In addition, the inclusion and exclusion allow for boundaries and guidelines for an otherwise qualitative and descriptive paper. Lastly, the topic is broad in terms of the researched components examined because it examines multiple facets of treatment. That is, while the five topics are interconnected, as they all affect people with brain injuries, they are very different in nature. People with brain injuries often experience a multitude of barriers to recovery and often rapid change in regards to cognitive, physical, and emotional development while rehabilitating from the brain injury. For example, people with an ABI may have a fast or spontaneous recovery in regard to their anger, which could impact research development. In contrast, people may also be experiencing other medical, financial, or legal issues while recovering from their ABI which may take precedence over the anger issues they experience. It is plausible that quick changes in recovery or juggling many problems may be a reason why there is limited research on this specific topic. Regardless, the current thesis aims to cover multiple components to ABI-specific treatment for anger management, rather than just exploring one method in literature.

Limitations

The research originated only from one database titled EBSCO Host. For future studies, it is recommended that researchers examine other databases such as ERIC: Educational Resource

In addition to the sole database, the current thesis does not include military-based ABI literature. The lack of military-based studies is due to the violent experiences veterans and military personnel are exposed to because those experiences may have an impact on anger not related to the typical experiences of those with an ABI. That is, the source of the unsolicited anger could be due to the ABI or potential mental health disorders that may present in people who have served in the military. However, the inclusion criteria should be expanded to include studies with military personnel in future research in order to identify more strategies for treatment. By expanding the inclusion criteria to include this population, there may be information on how to deal with the trauma associated with the injury.

**Multilevel Challenges**

Challenges to the ABI population fall into a variety of categories: client, program, organization, and societal level.

**Client level.** In terms of the client level, people with a brain injury have had some sort of negative impact to the brain. Regardless of the type of brain injury, there can be daunting consequences such as cognitive, physical, emotional, and social impairments. For example, a person with an ABI injury often have difficulty with their memory (McMillan & Wood, 2017), which can significantly impact their adherence and recollection of treatment.

**Program level.** At the program level challenges may include inconsistency of staff due to shift rotation or limited time allotments. Often people with ABI injuries receive programming in a rehabilitation center or hospital where staff rotation is high.

**Organizational level.** On the organizational level, there are limited resources in Canada for Brain Injury services in general, let alone the programs specific to ABI-directed anger management therapy.

**Societal level.** Finally, in regard to the societal level, treatment for anger management therapy would be different for individuals with a brain injury who have transitioned to residing in the community versus rehabilitation or hospital settings. People living in different areas, who would likely be in varying stages of their recovery, would have diverse triggers. People in the community would likely have societal stressors that may increase anger levels whereas those residing in a hospital rehabilitation setting may have restrictions not common of a community environment potentially causing increased episodes of anger.

**Recommendations**

**Recommendations for research.** As previously mentioned, it is recommended that research on the topic of anger management group therapy for people with brain injuries continues be expanded to include research with individuals who acquired a brain injury through the course of their military experience and more data from different databases.

**Inclusion of military personnel.** Military-based literature was not included in the current thesis despite the abundance of data in that field. The reason for the lack of these specific studies is due to the anger potentially stemming from a mental health disorder like PTSD rather than the brain injury itself. By incorporating studies with people who have experienced a brain injury while serving in the military, potential skills and techniques relating to trauma may be uncovered.
Expansion of databases accessed. As it was previously noted, only one sole databased titled EBSCO was used in the development of the current thesis. It is recommended that other databases are utilized to acquire more data, as there is currently a gap in ABI-specific group anger management therapy. Databases that should be accessed in future research are as followed: ERIC: Educational Resource Information Center, Global Health, Google Scholar, HubMed, Index Copernicus, Ingenta Connect, J-Gate, JournalSeek, Linguamatics, MEDLINE, MedlinePlus, Mendeley, Project MUSE, PubMed, and/or PubPsych.

Recommendations for treatment. Based off the research of this thesis, if treatment for anger management group therapy for the ABI community is implemented, therapists should consider altering their treatment approach from standard anger management group therapy procedures. Deviating from standard anger management therapy might be beneficial in order to better accommodate various barriers people with an ABI injuries experience. Therapists should consider accommodating fatigue, memory and emotional deficits, as well as altering their delivery of programming, homework, and assessments. In order to address the ABI population in treatment, clinicians can do the following: use clear, simple and concise language; avoid sarcasm or difficult humour, concepts, and analogies; encourage breaks; minimize the therapy length; avoid consecutive therapy sessions; provide external aids such as a calendar, memory notebook, or agenda; allow and encourage the use of smartphones and other technology to support clients; provide clear assignments with concise instructions; ensure clients have the capacity to complete assigned work; and carefully select group members during intake processes. Moreover, there are limited appropriate assessments for an ABI-specific population undergoing treatment for anger, but clinicians should use empirical assessments, like the STAXI-2, until a more suitable assessment is developed.
References


### Appendix A

#### Summary of Articles

<table>
<thead>
<tr>
<th>Cognitive Behaviour Therapy</th>
<th>Anger Management Group Therapy in ABI Populations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source Details</strong></td>
<td><strong>Summarized Information</strong></td>
</tr>
<tr>
<td><strong>Website Title:</strong> Cognitive Behavioural Therapy</td>
<td>Purpose: Website examined cognitive behavioural therapy (CBT), providing general information according to the Centre for Addiction and Mental Health (CAMH).</td>
</tr>
<tr>
<td><strong>Article Author(s):</strong> Not Applicable</td>
<td>Population/Sample: Not Applicable</td>
</tr>
<tr>
<td><strong>Results:</strong></td>
<td>Results: Not Applicable</td>
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<tr>
<th><strong>Article Title:</strong></th>
<th>Perspective Training to Treat Anger Problems After Brain Injury: Two Case Studies</th>
</tr>
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<tbody>
<tr>
<td><strong>Article Author(s):</strong> Jill Winegardner, Clare Keohane, Leyla Prince, Dawn Neumann</td>
<td></td>
</tr>
<tr>
<td><strong>Population/Sample:</strong> 2 case studies of male individuals with an ABI injury and their spouses.</td>
<td>Method: Examined observed anger, hostility, aggression, and perspective while delivering a 6-week perspective group targeting emotion dysregulation, and also included assessments from spousal relationships and self-recorded data.</td>
</tr>
<tr>
<td><strong>Results:</strong> Both participants displayed an aggression decrease and spouses identified significant behavioural changes.</td>
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<tr>
<th><strong>Article Title:</strong> Cognitive Behavioural Therapy for Aggression Among Individuals with Moderate to Severe Acquired Brain Injury: A Systematic Review and Meta-Analysis.</th>
<th>Purpose: Article reviewed several articles through meta-analysis to examine the effectiveness of CBT for anger in ABI populations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Article Author(s):</strong> Jerome Iruthayarajah, Fatimah Alibrahim, Swati Mehta, Shannon Janzen, Amanda McIntyre, Robert Teasell</td>
<td>Population/Sample: Not Applicable</td>
</tr>
<tr>
<td><strong>Method:</strong></td>
<td></td>
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**Reference:**

Utilized a variety of databases and inclusion/exclusion criteria to select appropriate articles in a meta-analytic review of data.

**Results:**
Seven articles were included; four were tested in relation to the STAXI and STAXI 2 measures. Results indicated CBT was beneficial for treating external anger but not internal anger.

**Article Title:**
Relationship Between Homework Completion and Outcome in Cognitive Behaviour Therapy.

**Article Author(s):**
C.S. Rees, P. McEvoy, P.R. Nathan

**Reference:**

Purpose:
Article examined both quantity and quality of homework related to a 10-week CBT group for people with mental illnesses.

Population/Sample:
94 participants with anxiety and/or depression.

Method:
Study examined relationship between several different components of CBT homework post treatment and 1-month follow-up.

Results:
Amount of homework completed was the strongest predictor of treatment success.

**Book Title:**
Treatment of Anger in Different Populations

**Book Author(s):**
Ephrem Fernandez

**Reference:**

Purpose:
Includes information on perspectives, clarification of boundaries, and unique factors in relation to angers in a variety of populations.

Population/Sample:
Varying populations.

Method:
Not Applicable

Results:
Not applicable

**Article Title:**
Group Cognitive-Behavioral Therapy for Anxiety Disorders with Personality Disorders in Day Clinic Setting.

**Article Author(s):**
P. Holas, H. Suszek, M. Szaniawska, A. Kokostruk

**Reference:**

Purpose:
Examined effectiveness of group CBT treatment modality.

Population/Sample:
People with anxiety disorders with comorbid personality disorders.

Method:
<table>
<thead>
<tr>
<th>Article Title:</th>
<th>Data collection while delivering 12 weeks of intensive daily group therapy. <strong>Results:</strong> Improvement during treatment leading to the examination of the benefits of group dynamic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of Group Psychotherapy on Anger Management Following Acquired Brain Injury</td>
<td><strong>Purpose:</strong> Article examined the efficacy of group psychotherapy people with an ABI injury in relation to their anger management skills. <strong>Population/Sample:</strong> 26 participants with an ABI were randomized. 24 began program, and 19 completed program. <strong>Method:</strong> Multiple baseline. 2 groups participated in an 8-week anger management program followed by a 4-week psychosocial treatment. Data collection occurred every 4 weeks during 12-week period. Data was collected using The Aggression Questionnaire-12, The State-Trait Anger and Expression Inventory-2 and The Multidimensional Anger Reaction Scale. <strong>Results:</strong> Anger levels decreased and coping skills increased by the end of the data collection period.</td>
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<tr>
<th>Book Title:</th>
<th>Neurobehavioural Disability and Social Handicap Following Traumatic Brain Injury. <strong>Purpose:</strong> Examines many constraints people with neuro-disabilities encounter, and what can be done to assist with the problems they face. <strong>Population/Sample:</strong> People with varying neuro-disabilities, including ABI injuries. <strong>Method:</strong> Not Applicable <strong>Results:</strong> Not Applicable</th>
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<td>Neurobehavioural Disability and Social Handicap Following Traumatic Brain Injury. <strong>Purpose:</strong> Examines many constraints people with neuro-disabilities encounter, and what can be done to assist with the problems they face. <strong>Population/Sample:</strong> People with varying neuro-disabilities, including ABI injuries. <strong>Method:</strong> Not Applicable <strong>Results:</strong> Not Applicable</td>
<td></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Book Author(s):</th>
<th>Tom M. McMillan, Rodger Ll. Wood</th>
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</thead>
<tbody>
<tr>
<td>Article Title:</td>
<td>Purpose:</td>
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<tr>
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<tr>
<td>What is Post TBI Fatigue?</td>
<td>Article collected information on fatigue after a traumatic brain injury and examine the challenges that afflict this symptom of brain injury.</td>
</tr>
<tr>
<td>Article Author(s):</td>
<td>Population/Sample:</td>
</tr>
<tr>
<td>J.B. Cantor, W. Gordon, S. Gumber</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Reference:</td>
<td>Method:</td>
</tr>
<tr>
<td></td>
<td>Results:</td>
</tr>
<tr>
<td></td>
<td>Fatigue following TBI injuries are common, impactful, and often untreated.</td>
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<table>
<thead>
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<th>Article Title:</th>
<th>Purpose:</th>
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<td>Cognitive Behavioural Therapy for Aggression Among Individuals with Moderate to Severe Acquired Brain Injury: A Systematic Review and Meta-Analysis.</td>
<td>Article reviewed several articles through meta-analysis to examine the effectiveness of CBT for anger in ABI populations.</td>
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<td>Jerome Iruthayarajah, Fatimah Alibrahim, Swati Mehta, Shannon Janzen, Amanda McIntyre, Robert Teasell</td>
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<tbody>
<tr>
<td>Return to Work After Work-Related Traumatic Brain Injury</td>
<td>Article examined demographic, clinical, and occupation factors to collect data on people with brain injuries who have returned to employment. Article also examined barriers to returning to work.</td>
</tr>
<tr>
<td>Article Author(s):</td>
<td>Population/Sample:</td>
</tr>
<tr>
<td>A. Colantonio, S. Salehi, V. Kristman, J.D. Cassidy, A. Carter, O. Vartanian, M. Bayley, B. Kirsh, D. Hebert, J. Lewko, O. Kubrak, S. Mantis, L. Vernich.</td>
<td>50 of 116 candidates participated; half returned to work and half did not. All participants had a traumatic brain injury and were seen in an outpatient assessment clinic.</td>
</tr>
<tr>
<td>Reference:</td>
<td>Method:</td>
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Mailed surveys and phone interviews were distributed to participants and results were compiled. 

**Results:**
Participants who returned to work were younger and had higher levels of education, on average. Significant factors included family/friend support, treatment provider support, accommodating employers, difficulty thinking and/or concentrating, and fatigue.

**Article Title:**
Can Cognitive Behavioral Therapy for Insomnia Also Treat Fatigue, Pain, and Mood Symptoms in Individuals With Traumatic Brain Injury? - A Multiple Case Report.

**Article Author(s):**
W. Lu, J.W. Krellman, M.P. Dijkers

**Reference:**

**Purpose:**
Article examined Insomnia-based CBT in relation to treating individuals with brain injury.

**Population/Sample:**
3 participants with TBIs of different severities.

**Method:**
Pre/Post measures were collected for insomnia, fatigue, depression, anxiety, and pain before, during, and after the delivery of insomnia-based CBT.

**Results:**
Trends of improvement were beginning to increase however they were not large enough to be considered clinically significant.

**Article Title:**
Fatigue Management by Speech-Language Pathologists for Adults with Traumatic Brain Injury.

**Article Author(s):**
E.J. Hicks, B.M. Larkins, S.C. Purdy

**Reference:**

**Purpose:**
Article examined techniques of speech-language pathologists (SLP) in the management of fatigue for patients with brain injuries.

**Population/Sample:**
13 SLPs from New Zealand hospitals and rehabilitation centres were included in the study.

**Method:**
SLPs participated in semi-structures interviews to examine their personal techniques in Fatigue Management Focused (FMF) communication intervention.

**Results:**
Four major themes emerged: intervention structure, client and family strategies, monitoring by both the client and therapist, and lifestyle and daily activities. Various skills were discussed.

<table>
<thead>
<tr>
<th>Homework and Assessments</th>
</tr>
</thead>
</table>
| **Article Title:** Relationship Between Homework Completion and Outcome in Cognitive Behaviour Therapy.  
**Article Author(s):** C.S. Rees, P. Mcevoy, P.R. Nathan  
**Population/Sample:** 94 participants with anxiety and/or depression.  
**Method:** Study examined relationship between several different components of CBT homework post treatment and 1-month follow-up.  
**Results:** Amount of homework completed was the strongest predictor of treatment success. |
| **Article Title:** The CBT Handbook: Cognitive Behavioural Therapy  
**Article Author(s):** C. Evans-Jones  
**Population/Sample:** Not Applicable  
**Method:** Not Applicable  
**Results:** Not Applicable |
| **Article Title:** The Processes of Cognitive Behavioral Therapy: A Review of Meta-Analyses.  
**Article Author(s):** N. Kazantzis, H.K. Luong, A.S. Usatoff, T. Impala, R.Y. Yew, S.G. Hofmann  
| **Purpose:** Article examines comprehensive collection of CBT processes including treatment processes (cognitive reappraisal, behavioral strategies, emotional regulation, motivation strategies, psychoeducation) and in-session processes (alliance, goal consensus and collaboration, feedback, group cohesion, homework)  
**Population/Sample:** |
| **Research** | 30 meta-analysis met criteria.  
**Method:** Analyze data from meta-analysis through specific inclusion criteria.  
**Results:** For treatment processes, the strongest support exists for cognitive and behavioral strategies as change processes. For in-session processes, the strongest support exists for the role of the alliance and homework assignments as predictors of outcome. |
| --- | --- |
| **Book Title:** The Anger Control Workbook  
**Book Author(s):** M. McKay, P.D. Rodgers  
**Population/Sample:** Not Applicable  
**Method:** Not Applicable  
**Results:** Not Applicable |
| **Article Title:** An Informant Report Behavior Diary For Measuring Temper Outbursts in an Intervention Setting.  
**Article Author(s):** L.E. Bull, C. Oliver, P.L. Tunnicliffe, K.A. Woodcock  
https://doi.org/10.1007/s10882-015-9429-1 | **Purpose:** Article examined use of a behaviour diary in individuals with neurodevelopmental disorders for tracking temper outbursts.  
**Population/Sample:** Caregivers of 12 individuals with Prader-Willi syndrome (PWS), a neurodevelopmental disease  
**Method:** Behaviour diaries were used over 4 weeks and structured interviews were used to collect data from caregivers. Heart rate was also monitored during temper outbursts.  
**Results:** Diaries were concurrent with behaviours and information from interviews, but reported a lower frequency of occurrence. |
| **Book Title:** Neurobehavioural Disability and Social Handicap Following Traumatic Brain Injury.  
**Book Author(s):** | **Purpose:** Examines many constraints people with neuro-disabilities encounter, and |
Tom M. McMillan, Rodger Ll. Wood  
what can be done to assist with the problems they face.  
**Population/Sample:** People with varying neuro-disabilities, including ABI injuries.  
**Method:** Not Applicable  
**Results:** Not Applicable

**Book Title:** Managing Anger  
**Book Author(s):** Helen O’Neill  
Purpose: Book serves as a manual for treating anger in individuals with cognitive impairment, including those with an ABI injury.  
**Population/Sample:** For individuals with heightened anger and cognitive impairments.  
**Method:** Not Applicable  
**Results:** Not Applicable

**Article Title:** Stait-Trait Anger Expression Inventory-2  
**Article Author(s):** Charles D. Spielberger, PHD  
**Population/Sample:** Not Applicable  
**Method:** Not Applicable  
**Results:** Not Applicable

**Article Title:** Anger Assessment in Clinical and Nonclinical Populations: Further Validation of the State–Trait Anger Expression Inventory-2.  
**Article Author(s):** M. Lievaart, I.H.A Franken, J.E. Hovens  
Purpose: Article further examines efficacy of widely used tool, STAXI-2.  
**Population/Sample:** Dutch undergraduate students, general population, and psychiatric patients.  
**Method:** Reliability, concurrent validity, and construct validity were examined.  
**Results:** Reliability and validity was strong in both clinical and nonclinical samples.

**Article Title:** State-Trait Anger Theory and the Utility of the Trait Anger Scale.  
**Purpose:** Article further examines efficacy of widely used tool, STAXI-2.
Article Author(s):

Article Title:
A Test of Spielberger’s State-Trait Theory of Anger With Adolescents: Five Hypotheses.
Article Author(s):

Purpose: Article further examines efficacy of widely used tool, STAXI-2.
Population/Sample: Article examined 8 studies that present support for the STAXI-2.
Method: Various components of the articles were being analyzed in this study.
Results: Results were discussed in terms of state–trait theory, convergent and discriminant validity for the Trait Anger Scale, anger expression, gender, and the implications for counselling.

<table>
<thead>
<tr>
<th>Memory Recall</th>
<th>Summarized Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Book Title:</strong></td>
<td><strong>Purpose:</strong> Book examines traumatic brain injury in general, the research that has been developed thus far in the scientific community, and the possible direction of treatment for individuals afflicted with traumatic brain injuries.</td>
</tr>
<tr>
<td><strong>Book Author(s):</strong> Harvey S. Levin, David H.K. Shum, Raymond C.K. Chan</td>
<td><strong>Population/Sample:</strong> Not Applicable</td>
</tr>
<tr>
<td></td>
<td><strong>Results:</strong> Not Applicable</td>
</tr>
</tbody>
</table>

Book Title:
| Article Title: | Memory Systems of the Brain: A Brief History and Current Perspective |
| Article Author(s): | Larry R. Squire |
| Purpose: | Article examines memory and the scientific knowledge behind it through history and in the present day. |
| Population/Sample: | Not applicable |
| Method: | Research article containing information about the historical and current knowledge of memory. |
| Results: | Not applicable |

| Article Title: | Implicit Memory and Early Unrepressed Unconscious: Their Role in the Therapeutic Process (How the Neurosciences Can Contribute to Psychoanalysis) |
| Article Author(s): | Mauro Mancia |
| Purpose: | Article examines implicit memory and the impact of this specific memory impairment on therapy. |
| Population/Sample: | Not applicable |
| Method: | Research article containing information about implicit memory and its impact on therapy. |
| Results: | Not applicable |

| Book Title: | Prospective Memory: An Overview of an Emerging Field |
| Book Author(s): | Mark A. McDaniel, Gilles O. Einstein |
| Purpose: | Book examines prospective memory, which focuses on memory actions in the future rather than the past. |
| Population/Sample: | Not Applicable |
| Method: | Not Applicable |
| Results: | Not Applicable |

<p>| Book Title: | Neurobehavioural Disability and Social Handicap Following Traumatic Brain Injury. |
| Book Author(s): | Tom M. McMillan, Rodger Ll. Wood |
| Purpose: | Examines many constraints people with neuro-disabilities encounter, and what can be done to assist with the problems they face. |
| Population/Sample: | People with varying neuro-disabilities, including ABI injuries. |
| Method: | Not Applicable |
| Results: | Not Applicable |</p>
<table>
<thead>
<tr>
<th>Article Title:</th>
<th>Efficacy of Memory Aids After Traumatic Brain Injury: A Single Case Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article Author(s):</td>
<td>H.R. Bos, D.R. Babbage, J.M. Leathem</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Article examined memory aids after a traumatic brain injury; specifically, the study aimed to examine the effectiveness of a smartphone used as a memory aid for the ABI population.</td>
</tr>
<tr>
<td>Population/Sample:</td>
<td>Single case series incorporating 7 participants with TBI injuries.</td>
</tr>
<tr>
<td>Method:</td>
<td>The study included a baseline, training, and treatment phase for either smartphone, notebook, or both. The tools were tested against memory tasks.</td>
</tr>
<tr>
<td>Results:</td>
<td>Participants with smartphones completed memory tasks within a specified time period. The use of a smartphone provided benefits that a notebook alone cannot provide.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Article Title:</th>
<th>Mymemory: A Mobile Memory Assistant for People with Traumatic Brain Injury</th>
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</thead>
<tbody>
<tr>
<td>Article Author(s):</td>
<td>Carole Chang, Annika Hinze, Judy Bowen, Leah Gilbert, Nicola Starky</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Article examined the efficacy of a technology-based memory assisting system called Mymemory in order to improve coping with memory deficits in participants.</td>
</tr>
<tr>
<td>Population/Sample:</td>
<td>The study incorporates six people with TBI injuries and 3 caregivers.</td>
</tr>
<tr>
<td>Method:</td>
<td>ABAB (or reversal) design in order to ensure a functional relationship.</td>
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<tr>
<td>Results:</td>
<td>All participants reported improvement in well-being, memory function, and autobiographical memory when using the application. The data on reductions in caregiver burnout are mixed.</td>
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<thead>
<tr>
<th>Article Title:</th>
<th>Effects of Group Versus Individual Therapy for Patients with Memory Disorder After an Acquired Brain Injury: A Randomized, Controlled Study.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article Author(s):</td>
<td>Marcin M. Lesniak, Patryk Mazurkiewicz, Szczepan Iwański, Joanna Szutkowska-Hoser, Joanna Seniów</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Article examined the difference between group versus individual therapy regarding participants with memory concerns post-injury.</td>
</tr>
<tr>
<td>Population/Sample:</td>
<td>65 participants with ABI injuries.</td>
</tr>
</tbody>
</table>
**Reference:**

**Method:**
This randomized, controlled, single-blind study assigned participants into three groups: no therapy, group therapy, or individual therapy. The participants were given memory tests in order to examine participation, disability, and impairment.

**Results:**
Both therapeutic groups had similar significant improvements and the effect sizes were large in both groups. The differences between individual and group therapy was not significant.

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**Article Title:**
Evaluation of a Structured Group Format Memory Rehabilitation Program for Adults Following Brain Injury.

**Article Author(s):**
K.L. Thickpenny-Davis, S.L. Barker-Collo

**Reference:**

**Purpose:**
Article examined the effectiveness of an 8-week group therapy treatment targeting memory impairments.

**Population/Sample:**
10 adults with TBI injuries and 2 adults with cerebral vascular accidents.

**Method:**
Tested participants’ memory pre-group, post-group, and 1-month follow-up.

**Results:**
Participation increased memory, strategies for memory, use of memory aids, and reduced memory-impairment behaviours.

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**Therapist Delivery**

<table>
<thead>
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<td>Book Author(s):</td>
<td>Tom M. McMillan, Rodger Ll. Wood</td>
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**Purpose:**
Examines many constraints people with neuro-disabilities encounter, and what can be done to assist with the problems they face.

**Population/Sample:**
People with varying neuro-disabilities, including ABI injuries.

**Method:**
Not Applicable

**Results:**
Not Applicable

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**Article Title:**
Cognitive Behaviour Therapy for the Treatment of Depression in Individuals with Brain Injury.

**Article Author(s):**
N. Khan-Bourne, R.G. Brown


- **Purpose:**
  Article examines depression in people who have had a specific ABI: stroke.
- **Population/Sample:**
  Adult population who have had a stroke and have depressive symptoms.
- **Method:**
  Depression following a stroke and the psychosocial impact is discussed, and current treatments are explored.
- **Results:**
  CBT is identified as a suitable treatment with alterations for cognitive impairments. Further research is required as there is a gap in the literature.

**Book Title:**
Managing Anger

**Book Author(s):**
Helen O’Neill


- **Purpose:**
  Book serves as a manual for treating anger in individuals with cognitive impairment, including those with an ABI injury.
- **Population/Sample:**
  For individuals with heightened anger and cognitive impairments.
- **Method:**
  Not Applicable
- **Results:**
  Not Applicable

**Article Title:**
The Neural Correlates of Abstract and Concrete Words: Evidence from Brain-Damaged Patients

**Article Author(s):**
Costanza Papagno, Giorgia Martello, Giulia Mattavelli


- **Purpose:**
  Article examines the impact of abstract versus concrete words in people with ABI injuries.
- **Population/Sample:**
  22 patients with ABI injuries.
- **Method:**
  120 (60 abstract, 60 concrete) noun groups were used in similarity judgement task for client.
- **Results:**
  Participants did significantly better with concrete rather than abstract words.

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### Emotional Regulation and Control

<table>
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<tr>
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</tr>
<tr>
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<tr>
<td>Method:</td>
<td>Not Applicable</td>
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<tr>
<td>Results:</td>
<td>Not Applicable</td>
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</tbody>
</table>

| Book Title: | Traumatic brain injury: Rehabilitation for everyday adaptive living |
| Book Author(s): | Jennie Ponsford, Pamela Snow, and Sue Sloan |
| Purpose: | Book examines traumatic brain injury and the rehabilitation process that follows an injury. |
| Population/Sample: | Not Applicable |
| Method: | Not Applicable |
| Results: | Not Applicable |

| Article Title: | A Transdiagnostic Investigation of Emotional Distress After Traumatic Brain Injury |
| Article Author(s): | C. Shields, T. Ownsworth, A A’Donovan, J. Fleming |
| Purpose: | Article examines emotional distress post-injury by identifying psychological processes that are present in these individuals. |
| Population/Sample: | 50 participants aged 19-66 who were 12-65 months post-TBI. |
| Method: | Participants completed measures of threat appraisals, avoidance behaviour, self-discrepancy, emotion dysregulation, worry, negative self-focused attention, and emotional distress. |
| Results: | Two underlying factors were revealed: Threats to Self, and Emotion Dysregulation. Participants had varying levels of emotional regulation, depression, and anxiety. |

<p>| Article Title: | Reducing Anger Outbursts After a Severe TBI: A Single-Case Study. |
| Article Author(s): | L.Rochat, R. Manalov, T. Aboulafia-Braka, C. Berner Kurkard, M.V. Linden |
| Purpose: | Article examined the effects of implementing two successive and complimentary treatment approaches to an individual with a severe TBI in order of reducing frequency and intensity of anger outbursts. |</p>
<table>
<thead>
<tr>
<th>Reference:</th>
<th>Population/Sample:</th>
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<tr>
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<td>Method:</td>
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<td>The first intervention had an AB design with maintenance, then the second intervention had an AC design with maintenance and a 1-month follow up. The first intervention was based on basic emotion recognition and the second was about self-regulation; the interventions used psychoeducation, self-control strategies, relaxation, assertiveness.</td>
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<tr>
<td></td>
<td>Results:</td>
</tr>
<tr>
<td></td>
<td>All interventions reduced anger frequency and intensity.</td>
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