

AN INVESTIGATION OF COGNITIVE BEHAVIOURAL THERAPY AND DIALECTICAL
BEHAVIOUR THERAPY AS EFFECTIVE COUNSELLING MODALITIES FOR EMOTION
REGULATION FOLLOWING TRAUMATIC BRAIN INJURY

by Amanda M. MacIntyre

A Capstone Research Project submitted in partial fulfilment
of the requirements for the degree of

Master of Counselling (MC)

City University of Seattle

Victoria, B.C., Canada Site

April 25, 2022

APPROVED BY Annette Przygoda, PhD, Capstone Supervisor, Master of Counselling Faculty

Andre Serzisko, M.A., R.C.C., Faculty Reader, Master of Counselling Program Director/Faculty

School of Health & Social Science

Abstract

The purpose of this Capstone Research Project is to explore the effectiveness of Cognitive Behavioural Therapy (CBT) and implementations of Dialectical Behaviour Therapy (DBT) use towards emotion regulation (ER) for clients with acquired traumatic brain injury (TBI). To begin the background of this topic as well as the significance and purpose of the paper will be presented. This will include a brief description of traumatic brain injury, why this is an area of interest to me and how this research can be beneficial to the counselling field. Chapter 2 will comprise of a literature review including an analysis of the current use of CBT with ER, specifically focused on individuals that have acquired TBI's or similar symptomatology. Chapter 3 will contain literature indicating DBT's efficacy in helping populations with similar emotion dysregulation as traumatic brain injury. The concluding chapter will contain a summary of the findings and suggestions for therapeutic applications. In addition to recommendations for counsellor's use of DBT with TBI clients.

Acknowledgements

I want to express my gratitude to the many people who have supported me on my journey to complete this project and encouraged me to complete my Graduate degree. I have amazing friends and family members who have cheered me on from the sidelines. Specifically, my husband. With the long nights, many assignments and pressures of writing a capstone project you have always been supportive of me. Thank you for your endless encouragement and adaptability. Thank you to my grandmother Shirley for continuously helping with the children when needed, in addition to spending time reading and listening to all my passionate ideas. Also, gratitude towards my mother for helping keep my house in order and caring for my children throughout this journey. My children are my main source of motivation and I am grateful for their patience with me, despite feeling like I am “always doing school work”.

Dedication

This capstone project is dedicated to my father who sustained a traumatic brain injury in 1988 and died in 2009. He continues to encourage me to explore improved ways of helping those who fall through the cracks.

Table of Contents

Abstract.....	2
Acknowledgements	3
Dedication	4
Chapter 1	7
Situating the Author	8
Traumatic Brain Injury and Emotion Regulation.....	9
Traumatic Brain Injury Comorbidity	11
Emotion Regulation and Quality of Life.....	12
Brain injury and Suicidality	13
Research Question	14
Definitions and Terms	14
Capstone Objective	16
Theoretical Basis	17
Traumatic Brain Injury and Borderline Personality Disorder	18
Outline of Remainder of Capstone.....	19
Chapter 2: Cognitive Behavioural Therapy Literature Review.....	21
Cognitive Behavioural Therapy.....	22
Cognitive Behavioural Therapy and Traumatic Brain Injury	23
Cognitive Behavioural Therapy and Intellectual Disabilities.....	26
Cognitive Behavioural Therapy and Emotion Regulation.....	27
Rapport Building	28
Adapted Cognitive Behavioural Therapy	29
Cognitive Behaviour Therapy with Traumatic Brain Injury and Suicidality	31
Third Wave Cognitive Behavioural Therapy.....	32
Critiques of Cognitive Behavioural Therapy with Traumatic Brain Injury.....	33
Chapter Summary	36
Chapter 3: Dialectical Behaviour Therapy and Application to Emotion Regulation	38
Dialectical Behaviour Therapy	38
Dialectical Behaviour Therapy in Comparison to Cognitive Behaviour Therapy	44
Existing Research on Emotion Regulation Interventions	45
Biosocial Theory and Emotion Dysregulation.....	47
Dialectical Behaviour Therapy and Suicidality	47
Dialectical Behaviour Therapy and Intellectual Disabilities	48

Dialectical Behaviour Therapy Skills System for Cognitive Challenges 50
The skills list of DBT-SS..... 51
Dialectical Behaviour Therapy and Traumatic Brain Injury..... 53
Chapter 3 Summary 54
Chapter 4: Recommendations 57
References 62

An Investigation of Cognitive Behavioural Therapy and Dialectical Behaviour Therapy as Effective Counselling Modalities for Emotion Regulation Following Traumatic Brain Injury

Chapter 1

Each year in Canada more than 20,000 people are hospitalized for traumatic brain injuries (TBI), the severity of which can range from mild to severe and include concussions (The Government of Canada, 2020). The incidence rate of brain injury in British Columbia is approximately 60 new cases per day or 22,000 cases of serious brain injury every year. Additionally, there are currently more than 180,000 individuals living with severe acquired brain injury in British Columbia. These prevalent statistics suggest that British Columbia is experiencing a silent brain injury epidemic and in recent years there has been growing Canadian government recognition for less severe TBI's, including sub concussions, multiple concussions and second impact syndrome (The Government of Canada, 2020).

The prevalence of TBI continues to be high, yet recovery remains under supported (Gómez-de-Regil et al., 2019). TBI's range on a continuum of severity, with even the mildest form having possible lifelong consequences and causes vary from high energy or high impact events, such as motor vehicle collisions, to less precarious activities, such as sports (The Government of Canada, 2020). The wide variation in causes and symptoms of TBI presents challenges for prevention efforts as single strategy preventions will not be effective. (The Government of Canada, 2020). There has been a developing focus of the Canadian Government on brain injury prevention programs; however, there are still limited resources, including minimal counselling resources, for those living with TBI. While numerous studies have acknowledged psychological distress as highly prevalent in this population, psychological

symptoms and emotion dysregulation regularly persevere untreated for years post-injury and are associated with poorer recovery, community integration, psychosocial adjustment, relationships, quality of life, independent living skills and employability (Arundine et al., 2012). Thus, making this a pertinent population to consider for counselling.

With the increased acknowledgement of multiple concussion syndrome and brain injuries caused by the opioid epidemic, this is an ideal time to further explore effective and meaningful interventions for one of the most life-altering symptoms of TBI - emotion dysregulation. These impairments make counselling individuals with TBI much more complex, which is why it requires further exploration and acknowledgement. Current TBI therapies include pharmacotherapy, psychotherapy and cognitive rehabilitation. However, psychological and emotional issues frequently remain overlooked even when physical, behavioural and cognitive symptoms are treated despite their significant impact on quality of life (Gómez-de-Regil et al., 2019). Despite its high prevalence and negative impact, relatively little analysis of treatments for emotion dysregulation with TBI has been conducted (Gómez-de-Regil et al., 2019). Considering the increased rates of individuals with TBI experiencing comorbid psychological disorders, it is likely counsellors will have clients with TBI and associated complexities and require adequate therapeutic modalities to work effectively with TBI clients (Gómez-de-Regil et al., 2019).

Situating the Author

My father was a survivor of a TBI and throughout my life, I witnessed his ongoing struggles with emotional dysregulation, identity and rehabilitation. After twenty years of living with the injury, he died by suicide. There was and continues to be a lack of support and services accessible for individuals with TBI. Professionally, I worked in mental health and addictions over the decade in rural Indigenous communities, health authorities and within the provincial

prison system. Throughout this work, the prevalence of TBI has been high and immensely under acknowledged. Treatment and supports are often divided into two categories: mental health or addiction with brain injury consistently falling through the cracks. With the increased acknowledgement of multiple concussion syndrome and brain injuries caused by the opioid epidemic, this is an ideal time to look further into effective and meaningful interventions for one of the most life-altering symptoms of TBI, emotion dysregulation.

Traumatic Brain Injury and Emotion Regulation

After experiencing a TBI it is common to have issues with the processing of emotions, specifically involving the anterior cingulate cortex which is often damaged in TBI due to its location is highly involved in emotional regulation (ER) (Neumann, Malec & Hammond, 2017). The variety of effects of TBI deficits in ER are among the most prevalent, persistent and manifest in a broad range (van der Horn et al., 2016). These include difficulties with executive functioning, and behavioural and emotional disinhibition in addition to reduced emotional awareness and presentation. Emotional dysregulation has been identified throughout literature reviews as an etiological and maintenance mechanism with many mental health concerns such as mood disorders, anxiety disorders, substance use disorders, eating disorders, schizophrenia and psychotic disorders (Neacsiu et al., 2014). Emotional dysregulation is a common impairment following brain injury involving emotional, behavioural and interpersonal challenges. These challenges have highlighted the need for rehabilitation focus to move towards socio-emotional adjustment, specifically the importance of learning to regulate emotions (Kim, et al., 2019). Individuals with acquired TBI have demonstrated deficits in their ability to regulate emotional behaviour, which can lead to issues in social functioning, concurrent mental health disorders, loss of employment and increased risk of suicide (Kim et al., 2019).

Specific emotion processing deficits are referred to as alexithymia. Features of alexithymia include limited awareness of personal emotions, reduction in acknowledging physical sensations associated with emotional responses, difficulty identifying or distinguishing emotions and an inclination for discussing facts rather than emotions. The prevalence of alexithymia after TBI ranges from 30% to 61% compared to 10% in the non-TBI population (Neumann et al., 2017). Alexithymia has related to emotion dysregulation difficulties after TBI, specifically anxiety, depression and anger. It is a deficit that warrants significant attention and concern (Neumann et al., 2017). Research has suggested that cognitive functioning for TBI clients places a demand on executive areas that are required for emotional control, thus resulting in less availability of these executive resources for ER. For individuals with TBI external tasks lead to increased mental fatigue, which then influences the ability to regulate emotions due to the exhaustion of executive network brain systems (van der Horn et al, 2016). How clients react and adapt to a stressful situation depends on their ability to actively regulate their emotional state (van der Horn et al., 2016).

The consequences of emotion dysregulation are substantial as it leads to the disruption of behaviours, especially goal oriented or prosocial behaviours. Inability to regulate emotional arousal also interferes with the development and maintenance of a sense of self. Effective interpersonal relationships depend on both a stable sense of self and a capacity for appropriate emotional expression (Linehan, 2014). Those with TBI who experience interpersonal dysregulation have chaotic or intense relationships with marked difficulties (Linehan, 2014). Survivors with TBI have varying severity with impaired emotion recognition and emotional dysregulation. Both factors, overall, are predictors of poor social and professional integration (Aboulafia-Brakha et al., 2016). The ability to regulate emotions and stress is an important

aspect of adaptation and is reflected using certain coping styles (van der Horn et al., 2016).

People with TBI often experience persistent difficulties with regards to regulating their thoughts and reactions to internal or environmental triggers (Wilson et al., 2017). Recognizing emotional dysregulation as a physiological symptom, thoughts and actions can be particularly useful for those with brain injury because individuals with TBI often lack self-awareness and may reject or become defensive feedback from others on their emotional behaviours (Kim et al., 2019).

Traumatic Brain Injury Comorbidity

The cognitive presentation and symptoms of a TBI are vastly variable, making it difficult to diagnose or categorize based on symptomatology (Wilson et al., 2017). Adversities in the domains of complex attention, executive ability, learning and memory are common, as are slowing of information processing and issues with social cognition (The Government of Canada, 2020). TBI's are also associated with disturbances in emotional function (i.e., irritability, frustration, tension or anxiety), personality changes (i.e., disinhibition, apathy or aggression) and physical disturbances (i.e., headache, sleep disorders or vertigo) (American Psychiatric Association (APA), 2013). Many behavioural expressions that result from a TBI co-exist with other disorders (Ponsford et al., 2016). Antisocial personality disorder (ASPD) and borderline personality disorder (BPD) are associated with frontal lobe abnormalities and may present similarly to the impacts of TBI (Miller, 2005). The reported prevalence ranges between 10% and 70% for anxiety and 18.5% and 61% for depression, co-occurring anxiety and depression are approximately 75% of cases. Post-TBI anxiety and depression are associated with lesser functional outcomes (Ponsford et al., 2016).

Emotion Regulation and Quality of Life

A decrease or changes in emotional and social behaviour are considered to be amongst the most common and debilitating outcomes of TBI (Henry et al., 2006). TBI may also disrupt working memory and increase the likelihood of prolonged negative emotional states, in addition to increased demands to regulate emotional and cognitive processes. Disruption in working memory in individuals with TBI also requires differential and compensatory recruitment of multiple areas in the brain to complete seemingly basic tasks assigned to them (Wadhawan et al., 2019). Many individuals with TBI never return to work or have difficulty maintaining meaningful social relationships resulting from changes related to their brain injury. Relatives of those with TBI have reported that emotional changes are a greater burden than physical impairments (Henry et al., 2006). Both clinically and anecdotally the regulation of emotions is impaired in TBI and is thought to be the underlying factor in these changes in emotional and social behaviour.

Individuals with TBI often have elevated levels of alexithymia (Henry et al., 2006). Counselling efforts should be focused on the restoration of this specific difficulty, particularly considering that Difficulty Identifying Emotions (DIE) has shown to have a significant impact on client quality of life (Henry et al., 2006). Henry's (2006) study found that higher scores on the DIE and Difficulty Describing Emotion (DDE) sub-scales were strongly associated with negative quality of life outcomes (Henry et al., 2006). This is consistent with other studies that had results indicating that both DIE and DDE are attributes of emotion regulation difficulties and are negatively associated with mental well-being. The reduction in quality of life based on subsets of emotion dysregulation suggests that assessing and treating the emotional processing discrepancies associated with TBI should be seen as an imperative priority (Henry et al., 2006).

Brain injury and Suicidality

Negative mental and physical outcomes including suicidal behaviours, completed suicide and suicidal ideation have been associated with a history of TBI. Suicide rates in TBI individuals are between 2.7 to 4 times higher than that of the general population when matched for sex and age (Miller, 2005). A notable feature of research findings is the pervasive suicidal behaviours, documented up to 25 years or more post-injury (Simpson et al., 2011). Findings also demonstrated the increased suicide risk post-TBI with risk indicators for TBI outpatients including hopelessness (35%), suicide ideation (23%), and suicide attempts (18%) (Miller, 2005). Considering that individuals with TBI have higher comorbidity of substance use and psychiatric disorders, both of which are independent risk factors in suicidality, it is not unprecedented that there is an elevated rate of death by suicide in individuals with TBI. However, this increase appears to be present even after adjustment for substance use and psychiatric disorders (Wadhawan et al., 2019). Robust data exists identifying a correlation between TBI and death by suicide with three times greater risk of death by suicide shown in adults with a diagnosis of concussion (Wadhawan et al., 2019).

Hopelessness is widely observed among people with severe TBI over the long term (greater than 1 year) with rates of moderate to severe hopelessness as high as 35% being reported between 1 and 10 years post-injury (Simpson et al., 2011). Studies in severe TBI samples have found that hopelessness was a strong independent predictor of suicidal ideation, with suicide ideation a strong predictor of post-injury suicide attempts (Simpson et al., 2011). Following a TBI, individuals have increased vulnerability for suicidal behaviours and suicidal ideation. This is likely due to the impairment in their ability to regulate cognitive and emotional responses. Executive functions, including problem-solving and cognitive flexibility, are additional risks for

suicidality which are disrupted by impaired ER induced by TBI (Wadhawan et al., 2019). A person's inability to regulate cognitive and emotional responses, in combination with frontotemporal injuries commonly seen in TBI increases the overall risk for suicidal thoughts and behaviours in individuals with a history of TBI (Wadhawan et al., 2019).

Research Question

Helping individuals with a brain injury regulate emotions has remained a challenge due to impaired cognition disrupting a person's ability to learn and apply new skills with many current treatment programs relying primarily on cognitive cues and cognitive awareness (Kim et al., 2019). For persons with TBI learning is acquired through sensory and perceptual experiences. Explicit learning (the process of consciously encoding, consolidating, storing and retrieving factual knowledge) is more impaired than implicit learning (the process of unconsciously acquiring or modifying behaviour through experience) (Kim et al., 2019). Minimal studies have included ER as a treatment target or outcome in brain injury research (Neumann et al., 2017). Since adequate emotional functioning is integral to well-being and quality of life this topic requires further exploration. This inspires the presenting question: What are effective counselling strategies that increase emotion regulation for adults with acquired traumatic brain injury?

Definitions and Terms

Emotional Regulation (ER)

ER is the ability to inhibit impulsive and inappropriate behaviour related to strong negative or positive emotions, act in a way that is not mood dependent, self soothe bodily arousal and refocus attention in presence of strong emotions (Linehan, 2014). ER relates to the ability to modulate subjective experiences and expression of emotions influenced by the way the situation

is perceived (Aboulafia-Brakha et al., 2016). It also includes the ability to react adequately in emotionally salient, stressful and often unpredictable situations (van der Horn et al., 2016).

Emotion dysregulation

Emotion dysregulation is the inability, even when one's best efforts are applied, to change or regulate emotional cues, experiences, actions or verbal responses under normative conditions. Characteristics include the inability to regulate intense arousal, problems turning attention away from emotional cues, and insufficient control of impulsive behaviours related to strong positive and negative affect (Linehan, 2014).

Acquired TBI

An acquired brain injury is any post-natal brain damage. Acquired TBI differs from a non-traumatic brain injury as it occurs from an external force impact, such as a motor vehicle accident, rather than internal causes such as a stroke or infection (Gómez-de-Regil et al., 2019). To be diagnosed with a TBI one needs to meet the criteria for a major or mild neurocognitive disorder. In addition, there must be evidence of an impact to the head or other mechanisms of rapid movement or displacement of the brain within the skull, with one or more of the following: loss of consciousness, posttraumatic amnesia, disorientation and confusion or neurological signs. The neurocognitive disorder must also present immediately after the occurrence of the traumatic brain injury or immediately after recovery of consciousness and persist past the acute post-injury period (APA, 2013). Taking into consideration symptom severity and duration (loss of consciousness, posttraumatic amnesia, and memory and motor deficits) TBI can be classified as concussion, mild, moderate, or severe (Gómez-de-Regil et al., 2019).

Cognitive-behavioural therapy (CBT)

CBT refers to a class of interventions sharing the basic foundation that psychological distress is maintained by cognitive factors. The core premise of this treatment approach is that maladaptive cognitions add to the maintenance of emotional distress and problem behaviour. These maladaptive cognitions include general beliefs or schemas about the world and the self supporting specific and automatic thoughts in particular situations. The basic model posits that therapeutic strategies to change these maladaptive cognitions lead to changes in emotional distress and problematic behaviours (Hofmann et al., 2012).

Dialectical Behaviour Therapy (DBT)

DBT is a broad-based CBT treatment originally developed for chronically suicidal individuals diagnosed with Borderline Personality Disorder (BPD). It consists of individual psychotherapy, group skill training, telephone coaching, and a therapist consultation team. It is based on the dialectical and biosocial theory of psychological disorder and emphasizes the role of difficulties in regulating emotions both under and over control and behaviour. The overall goal of DBT is to help clients change behaviour and thinking, as well as emotional and interpersonal patterns associated with problems (Linehan, 2014).

Capstone Objective

The objective of this capstone is to identify current effective strategies for improving emotion regulation for clients who live with a traumatic brain injury (TBI). This population presents many challenges, including psychological changes in several areas such as altered executive functioning, memory loss, anger and issues with emotion regulation. The basic concept of how to counsel a client with a TBI may be challenging due to the impact the brain injury has on a client's life and ability to participate in traditional therapies (Ponsford et al, 2016). Evidence shows that the effectiveness of pharmacological therapy is limited, thus developing non-

pharmacological treatments is essential (Ponsford et al., 2016). Current counselling strategies used for individuals with TBI and how they influence emotion regulation will be explored - specifically, the counselling modality with most evidence-based research- CBT. An additional focus and suggestion will be the investigation of dialectical behaviour therapy and how its use would be beneficial for ER with TBI clientele.

Theoretical Basis

Cognitive Behaviour Theory

Cognitive behaviour theory suggests thoughts, emotions and behaviour are all connected. Thus, what we think and do affects the way we feel. The cognitive model of mental illness, initially developed by Beck in 1964, posits that people's emotions and behaviours are influenced by their perception of events and emphasises how an individual's thoughts, feelings, behaviour and physical symptoms interact. The theory posits that a situation in itself does not determine what people feel but rather the way they interpret the situation. How people feel is determined by the way they interpret situations and their thoughts (Fenn & Byrne, 2013).

Biosocial Theory

This capstone will identify problem behaviours in terms of the biosocial theory. The central idea is that people with significant difficulties including self-destructive behaviours, depression, aggression, substance abuse and other impulsive behaviours frequently have issues with their emotion regulation system. These emotional issues result from an individual's biological makeup in conjunction with their past experiences. A dysfunction in any part of the extremely complex human emotion regulation system can provide a biological basis for initial emotional vulnerability (Linehan, 2014). This perspective views self-destructive behaviours as maladaptive attempts to manage extreme emotion. Emotional dysregulation is an outcome of

inherited genetic vulnerabilities and an invalidating environment (Lew et al., 2006). Considering that our surroundings cannot always be controlled, and we are unable to control others, ER skills need to be developed for an improved quality of life. ER skills are targeted to identify the ability to control and influence emotions when you have them, how you are experiencing them and how you are expressing them (Linehan, 2014).

Traumatic Brain Injury and Borderline Personality Disorder

BPD is characterized by a general instability in relationships, self-image and affect, combined with severe behavioural impulsivity. It is thought to result from a complex interactive bio-psycho-social developmental breakdown (Gagnon et al, 2006). Research suggests there is an association between TBI and psychiatric disorders by demonstrating high rates of major depression, BPD, generalized anxiety disorder, bipolar affective disorder, and avoidant personality disorder subsequent to TBI (Miller, 2005). Post-TBI personality disorders were diagnosed in 66% of the sample, independent of TBI severity, age upon injury and time since injury. The most common post-TBI personality disorders are BPD, avoidant, paranoid, obsessive compulsive and narcissistic personality disorder (Miller, 2005). Numerous studies have researched biological modifications in the emotion circuitry of individuals diagnosed with BPD. The findings are extensive with functional and structural data supporting enhanced reactivity and slow return to physiological baseline in BPD clients. Recent studies identified reduced neural connectivity between brain areas and the amygdala with reduced activation of prefrontal areas after emotional induction (Neacsiu et al., 2014).

Similarities exist in personality characteristics of those suffering from TBI (particularly frontal lobe injuries) and those suffering from personality disorders, especially BPD (Miller, 2005). These traits include instability of self-image, interpersonal relationships and affect in

combination with impulsive behaviours. Considering the known difficulties with frontal lobe disinhibition and the persistent adjustment challenges involving accepting a modified identity, while grieving the loss of the former, pre-TBI, self (Miller, 2005). It has been suggested that individuals with TBI develop mistrust toward the social environment after repetitive failures of social adaptation (Gagnon et al., 2006). As many as two-thirds of individuals living with TBI are affected by significant personality changes for periods enduring up to 15 years and more.

Borderline traits and symptoms after TBI belonged to the affective realm with presented feelings of depression, helplessness, worthlessness, guilt, anger, anxiety and loneliness-boredom-emptiness (Gagnon et al., 2006). These research implications suggest that addressing the regulation of emotions is fundamental to therapeutic efficacy with TBI clients. As such, this capstone intends to highlight the strategies that will be most effective and the ways they can be implemented to the TBI population.

Outline of Remainder of Capstone

I will be conducting a thorough literature review on current counselling practices addressing emotion regulation that can effectively be used with clients who have acquired TBI. As previously discussed, there are many variations of symptoms present in TBI and I have specifically chosen ER due to its increased risk of impulsivity, self-harm and overall life satisfaction (Linehan, 2014). In chapter 2, a literature review will explore CBT, one of the most researched and evidence-based therapy for increasing ER in TBI. CBT's efficacy and adaptations that improve the applicability of CBT to TBI clients will be examined, in addition to CBT limitations. Chapter 3 will address the use of Dialectical Behaviour Therapy strategies to treat ER in other client populations, including cognitively challenged individuals and provide

suggestions on how DBT techniques can be applied to TBI clients. This paper will conclude with recommendations regarding the potential utilization of DBT based therapy with TBI clients.

Chapter 2: Cognitive Behavioural Therapy Literature Review

The complex aetiology of psychological difficulties after TBI make it particularly difficult for counsellors to identify the optimum therapeutic approaches (Wilson et al., 2017). Amongst the many psychological therapies, CBT is the empirically validated treatment of choice for a range of psychiatric disorders (Arundine et al., 2012). CBT is a widely used intervention with increasing literature revealing that it can be successfully adapted and applied to a diverse set of neurological and medical populations. This is due to its functional components that allow accommodation for cognitive functioning variations in individual clients (Arundine, 2009). The combination of a flexible yet structured format in addition to its adaptability makes it effective for TBI (Arundine et al., 2012).

Research has examined CBT treatment benefits in brain-injured populations for social anxiety and emotional distress (Arundine et al., 2012). Studies have demonstrated that clients with mild intellectual disabilities have exhibited the ability to utilize skills considered necessary for the cognitive component of CBT. These skills include emotional labelling, emotion recognition and understanding of the mediating role of cognitions Taylor et al., 2008). These skills do appear to decline as verbal ability decreases: however, it is not well established whether this is a function of the complexity of the experimental tasks presented to study participants (Taylor et al., 2008). A small body of literature has emerged that provides empirical support for using CBT to increase mood and coping after brain injury with the findings largely supporting the short-term efficacy of CBT interventions (Arundine, 2009). This chapter will introduce CBT, followed by a review of the literature regarding the use of CBT for TBI, CBT and intellectual disabilities, CBT and ER, third-wave CBT, adapted CBT, critiques of CBT, and a chapter conclusion.

Cognitive Behavioural Therapy

CBT encompasses a family of interventions based on the view that cognition influences behaviour, cognition can be monitored and adapted, and cognitive adaptations can change behaviours (Wilson et al., 2017). A common principle of CBT is that humans are active agents creating their own meaning and reality of the world and people have the capacity to modify their thoughts and behaviours to enhance their psychological well-being (Wilson et al., 2017). CBT is built on the assumption that cognitions strongly influence behaviours and, through awareness, can be quantified and controlled. Therefore, a person can accomplish behavioural changes through recognition and control of preceding thoughts (Gómez-de-Regil et al., 2019).

Components of CBT that separate it from other therapy techniques include the emphasis on specific goals and the use of active change strategies. These include challenging unhelpful beliefs, completion of tasks in the time between sessions and an immediate focus on the present (Gallagher et al., 2019). The broad objectives of traditional CBT programs are to identify and modify the thoughts and behaviours that are causing distress, understand individual schemas, develop and test a new hypothesis and apply new adaptive thinking styles and coping skills (Wilson et al., 2017). There are components of CBT that relate to techniques and therapeutic strategies, such as arousal management skills training and elements that relate to the content, such as developing new beliefs about the self, the world and the future (Gallagher et al., 2019). Formulating a CBT-based treatment plan entails setting specific therapy goals that are collaboratively determined and agreed upon by the client and counsellor (Kangas & McDonald, 2011). Treatment goals often focus on reducing psychological symptoms, such as decreasing anxiety and stress symptoms or concentrate on increasing desired behaviours or outcomes, such as engaging in more social activities for persons who are isolated (Kangas & McDonald, 2011).

CBT utilizes both cognitive and behavioural strategies to help clients eliminate the detrimental cycle that occurs amongst distorted thoughts, problematic emotions and maladaptive behaviours (Jazaieri et al, 2017). CBT includes training in cognitive restructuring of maladaptive beliefs (cognitive change) and behavioural strategies considered to be an effective treatment of psychological concerns (Jazaieri et al., 2017). CBT differs from other therapies as it does not rely on hard to define constructs that are not easily taught or described in a concrete nature (O'Donohue & Fisher, 2012).

Cognitive Behavioural Therapy and Traumatic Brain Injury

Once a TBI client has become physically stable, subsequent cognitive, emotional, behavioural and social difficulties may surface, hindering engagement with treatment and daily activities (Gómez-de-Regil et al., 2019). Managing these challenges requires a comprehensive treatment approach. CBT is the benchmark method for treating anxiety and depression in the otherwise healthy population and has been the most researched method for addressing anxiety and depression in individuals with TBI (Ponsford et al., 2020). CBT is a widely used clinical intervention with a demonstrated efficacy in several populations including those with neurological disorders (Arundine et al., 2012). As a result of its structured approach focused on concrete thoughts and behaviours, CBT is also recognized as appropriate for treating post TBI depression and anxiety (Kim et al., 2019). There is an increasing reported popularity of CBT for managing emotional dysregulations and appropriately tailored CBT is successful for TBI clients throughout various levels of cognitive functioning (Arundine et al., 2012). As the most widely used and researched psychotherapeutic approach, CBT for TBI clients has provided promising results to reduce anger, depression, anxiety and PTSD symptoms by improving coping (Gómez-de-Regil et al., 2019).

Given the additional acquired challenges that TBI clients face, such as self-awareness or executive functioning skills, flexibility and counsellor preparedness to adapt therapy to individual clients' needs is particularly important (Wilson et al., 2017). The goal of CBT is to help people understand the link between thought processes and behaviours, identify thinking distortions, and generate rational interpretations of events. This 'hypothesis testing' approach ideally results in a shift to a more objective appraisal of experience and modifications of distorted cognitive schemas used to process information. Subsequently, this is intended to make changes in belief systems (Wilson et al., 2017). Alleviating the chronic disability associated with TBI may not be realistic; however, improving functioning by commencing daily activities is a realistic and measurable goal in regard to improving functional well-being (Kangas & McDonald, 201; Persons, 2008). CBT's primary focus on the present, as opposed to past events, places a lesser cognitive and memory demand during therapy. The varying components of CBT enable the therapist to accommodate for individual differences including cognitive functioning (Arundine et al., 2012). Additional components of CBT have been given praise with regard to supporting changes after TBI. For example, some studies highlighted the importance of using personalised metaphors and clients' personal role models, suggesting this helps to reduce the load on memory, particularly if someone has difficulty learning new verbal information (Gallagher et al., 2019). CBT also accommodates for executive deficits in planning, abstract thinking, idea-generation and choosing specific, measurable, realistic, achievable, and time limited (SMART) goals (Gallagher et al., 2019).

The objective of CBT is to create opportunities where an individual can find new meanings and create skills to build meanings within their own contexts, rather than challenging or altering cognitive content which may be exceptionally difficult with a TBI (Wilson et al.,

2017). These objectives are most often facilitated through learning new adaptive coping strategies (Wilson et al., 2017). Treatment strategies include the development of therapeutic rapport, psychoeducation of the CBT methodology, collaborative goal setting, case formulation that creates a shared understanding, self-monitoring thoughts, feelings and behaviours, implementing of cognitive change techniques, including cognitive restructuring of maladaptive thoughts, assumptions, or core beliefs, in session and applied between sessions as homework (Wilson et al., 2017). These components have been applied to differing degrees in individual CBT interventions for people with TBI, specifically targeting symptoms such as anxiety (Hodgson et al., 2005), acute stress (Bryant et al., 2003), anger (Medd & Tate, 2000), insomnia and fatigue (van Kessel et al., 2008) and depression (Ownsworth, 2005; Wilson et al., 2017).

Behavioural change techniques have also been used with TBI clients, specifically behavioural activation, relaxation techniques and rehearsal of such as assertiveness or problem solving (Wilson et al., 2017). Facilitated CBT group formats have many potential benefits. For example, groups offer a supportive environment whereby peer support can normalize and validate people's post-injury problems, thus promoting acceptance of the need to use new coping strategies. Groups also provide a positive avenue for reconstructing a sense of self-identity following TBI (Wilson et al., 2017). A randomized control trial (RCT) that utilized a suicide prevention intervention, based on the application of CBT in a group setting that targeted individuals with a history of TBI demonstrated a significant decrease in hopelessness scores post-treatment with maintenance of treatment effects at a 3-month follow-up (Wadhawan et al., 2019). When incorporated with holistic rehabilitation programs CBT has demonstrated enhanced outcomes after brain injury, including community integration (Arundine et al., 2012). Despite the

promising results from current research, CBT strategies require adaptations for this population in order to improve intervention efficacy and allow replication (Gómez-de-Regil et al., 2019).

Cognitive Behavioural Therapy and Intellectual Disabilities

The American Association on Intellectual and Developmental Disabilities defines intellectual and developmental disabilities as “limitations both in intellectual functioning and adaptive behaviour” (American Association on Intellectual and Developmental Disabilities, 2010). More specifically, adaptive behaviour assesses conceptual skills such as language, money and the concept of time. Social skills include interpersonal skills and social problem solving, whereas practical skills involve activities of daily living (Maulik et al., 2011). This definition is applicable to many individuals with TBI at varying times in their rehabilitation process. People with intellectual disabilities, as with TBI, are likely to experience a variety of circumstances and life experiences associated with an increased risk of developing mental health problems such as unemployment, poverty, limited meaningful relationships, stressful family circumstances and abuse (Taylor et al., 2008). These individuals may also have fewer psychological or emotional resources available to cope effectively with stressful events concurrent with cognitive difficulties, including memory loss, reduced problem-solving and limited planning skills (Taylor et al., 2008).

Individuals with intellectual disabilities have previously been thought to not have the cognitive abilities required to understand or benefit from CBT. The notion that mature and complete cognitive capacity is necessary for positive outcomes in CBT is debatable (Taylor et al., 2008). In spite of their life experiences that potentially increase their risk of mental health problems, people with intellectual disabilities and TBI have not historically been provided opportunities to partake in cognitive behavioural interventions, regardless of the proven

effectiveness of CBT for mental health and emotional issues in individuals without such labels (Taylor et al., 2008). The evidence for the effectiveness of CBT for those with intellectual disabilities and TBI's remains limited. Using limited case studies and case series reports research has indicated that these approaches show benefits in the effective treatment of mental health problems experienced by people in these populations (Taylor et al., 2008). There is no distinct evidence in the intellectual disabilities field that deficits in specific cognitive abilities result in lesser outcomes. Studies with children have indicated that it is not necessary to have mature adult cognitive functioning to experience benefits from CBT (Taylor et al., 2008). Comparably, studies have suggested that CBT techniques need to be adapted and simplified for people with intellectual disabilities and various other mental health problems to benefit from interventions that contain the key elements of cognitive therapy (Taylor et al., 2008). Other research suggests that psychological therapies, primarily CBT, can benefit clients living with intellectual disabilities work through emotional concerns where no alternatives have been successful (Taylor et al., 2008). Considering the symptomatology of intellectual disabilities there are many consistencies with those of TBI.

Cognitive Behavioural Therapy and Emotion Regulation

Emotions are physiological states manifested in individual behavioural responses to environmental stimuli and interpreted as either positive or negative feelings (Kim et al., 2019). Deficits in ER can minimize the potential benefits of therapy by influencing client attendance, participation, ability to engage and rapport building (Neumann et al., 2017). Psychological distress after TBI presents a broad range of emotion dysregulation and cannot fit into specific diagnostic categories (Wilson et al., 2017). Minimal studies in brain injury have specifically researched or included ER as a treatment target or outcome (Neumann et al., 2017). An integral

feature of CBT is the management of emotional experiences associated with psychopathology. Emotion regulatory strategies have demonstrated the ability to predict, moderate and mediate treatment response to CBT (Klumpp et al., 2014). Many CBT techniques help individuals manage negative emotional experiences, create more adaptive emotional responses or learn acceptance of emotional responses that create distress (O'Donohue & Fisher, 2012). Research suggests that CBT may be mediated by top-down regulation and decreases emotional reactivity (Klumpp et al., 2014).

CBT proposes that the initial opportunity to regulate emotions when responding to an event is when an individual anticipates situations and can actively choose whether to engage in those that are emotionally charged. This is known as situation selection (O'Donohue & Fisher, 2012). The next opportunity is situation modification, where an individual can change a situation based on the projected influence of an emotional event. This is established by using problem solving strategies to identify inconsistencies between the present situation and their desired goal (O'Donohue & Fisher, 2012). Cognitive reappraisal is another CBT strategy where individuals explore alternative views or interpretations of a situation or context to adapt or minimize the experience of emotional distress. Clients explore restructuring their interpretations to be more congruent with behavioural engagement in context, thus reducing the probability of suffering from emotional distress (O'Donohue & Fisher, 2012).

Rapport Building

Developing and maintaining a positive therapeutic alliance is essential in all categories of TBI rehabilitation. Working with people that have impaired self-awareness or negative self-concept requires specific attention to the therapeutic relationship (Wilson et al., 2017). A strong alliance can nurture a sense of emotional safety for the person with the brain injury to explore the

meaning of changes to self and facilitate open communication (Wilson et al., 2017). When emotional dysregulation is pervasive or severe it interferes with a secure sense of self and regulated emotional expression which influences displays of anger and hinders relationships (Linehan, 2014). Openness, empathy and trust in the relationship can lower threat-based reactions including aggression or denial while providing emotional safety. This is beneficial to exploring the subjective meaning of the brain injury while fostering the ideas of new potential (Wilson et al., 2017). CBT involves working collaboratively with the client on the development of adaptive emotion regulation strategies to improve their functionality and ability to live a more satisfying life (Wilson et al., 2017).

Adapted Cognitive Behavioural Therapy

The World Health Organization's International Classification of Functioning (WHO ICF) has highlighted a heterogeneity, suggesting that every individual affected by brain injury will have a unique set of needs and requires suitably adapted psychological therapies to meet their diverse needs (Gallagher et al., 2019). The structure of CBT is widely viewed as beneficial for people with TBI. However, some techniques may rely on areas of the brain that are impaired, such as language, memory and executive functions which are required to learn, retain information and transfer skills outside of therapy (Wilson et al., 2017). Given the presence of cognitive impairments with TBI, it is important to adapt therapy to maximize the benefits. Ponsford's (2020) study demonstrated findings that suggest cognitive impairment is not a barrier to achieving symptom reduction using adapted CBT for individuals with TBI. These findings are consistent with those of other randomized control trials (RCT) focused on individuals with depression, which also found that injury severity or cognitive impairment did not inhibit responses to CBT (Ponsford et al., 2020).

One of the most frequently recorded adaptations is educating the client about the CBT model. This is a core component of CBT; however, the emphasis of this adaptation was related to promoting understanding of how specific changes to cognition, affect and behaviour occur as a result of TBI (Gallagher et al., 2019). TBI client's not only need to learn that their cognitive capacities have changed as a result of the injury but also how this has catalyzed new patterns of thinking that can influence affect and behaviours (Gallagher et al., 2019). A CBT adaptation was previously developed for post-TBI anxiety which included handouts, visual prompts, simplified self-monitoring record sheets, management strategies for executive difficulties and a focus on concrete behavioural strategies (Ponsford et al., 2016). Providing information about emotions and ER with clients normalizes their experiences and provides a means of explaining issues following a brain injury (Wilson et al., 2017). Other practical adaptations have included shorter and more frequent sessions with rest breaks, written summaries, external aids to improve learning and memory, concrete behavioural examples of abstract concepts, ongoing reminders, involvement of client's support people and a greater emphasis on behavioural or experiential change techniques rather than those based on reasoning and language (Wilson et al., 2017).

For many with TBI, emotional recovery includes improvement of well-being by finding a new life that fits with pre-injury values rather than a decrease of specific symptoms. Attention to re-engagement in positive aspects of life, personal growth and meaning are pertinent (Wilson et al., 2017). Psychoeducation that includes information about emotions and emotion regulation normalizes experiences and helps explain problems following the brain injury. This aids in altering the individual's relationship with thoughts, decreasing impulsive emotional responses and identifying ways of using positive emotions (Wilson et al., 2017). Therapists must use concrete examples and help clients generate their own alternative solutions. Further

modifications to CBT successful with TBI clients include providing alternative thoughts during cognitive restructuring and using role-play to rehearse target behaviours (Wilson et al., 2017; Gallagher et al., 2019). Booster sessions are another integral component to successful CBT to consolidate achievements for individuals with executive and memory difficulties, as are audio-recordings of sessions and relaxation exercises for individuals to access between sessions (Gallagher et al., 2019; Ponsford et al., 2016).

Cognitive Behaviour Therapy with Traumatic Brain Injury and Suicidality

There have been numerous recommendations from research for the development of psychological therapies that work as a treatment modality for suicidal distress after TBI (Simpson et al., 2011). Hopelessness, which has presented as a common reoccurring symptom after TBI, is a pertinent precursor of elevated suicidality and suicide risk. The persistence of emotional distress in TBI highlights the importance of both early identification and effective treatment interventions. Traditional psychiatric treatments both pharmacologic and supportive, have been found to be largely ineffective with TBI clients (Bradbury et al., 2008). Fairly extensive evidence from a number of studies supports the therapeutic benefits of CBT for reducing symptoms of depression after TBI (Wadhawan et al., 2019). Reduced self-awareness has been associated with adjustment difficulties post-brain injury. Lower levels of self-awareness often result in an underestimation of symptoms and difficulties articulating and recognizing their own impairments. Conversely, individuals with higher levels of self-awareness appear to experience greater levels of emotional distress which promotes greater motivation to change, translating into better outcomes (Bradbury et al., 2008). One promising psychological treatment that may improve both effective coping and self-awareness is CBT (Bradbury et al., 2008).

The Window to Hope (WtoH) program is a small group psychological intervention that aims to treat chronic hopelessness experienced after TBI (Simpson et al., 2011). The program was developed using principles and therapeutic techniques from CBT. The WtoH program is developed around four core CBT therapeutic strategies, behavioural activation, cognitive restructuring, problem solving and relapse prevention using an adaptation of CBT for people with TBI. Findings emphasize that building hope and effective problem-solving skills are imperative clinical targets for preventing suicide in the TBI population. WtoH as an intervention, produced a strong treatment effect in reducing levels of hopelessness among participants compared with wait-list controls. The extent of the change is comparable to earlier trials of CBT programs that treated hopelessness among samples of non- TBI depressed inpatients and outpatients (Simpson et al., 2011).

Third Wave Cognitive Behavioural Therapy

The evolution of the behavioural therapies is viewed as three generations with each being relevant to TBI. The first generation incorporated the traditional behaviour therapies based on principles of operant and classical conditioning that have been successful in managing overt behavioural dysregulation following TBI (Kangas & McDonald, 2011). The second generation consists of the traditional cognitive therapy and CBT interventions including Albert Ellis's Rationale Emotive Behavioural Therapy (REBT) and Aaron Beck's CBT approaches, which have also been applied to people with TBI. The current third wave of behavioural therapies includes acceptance commitment therapy (ACT), mindfulness-based therapies and Dialectical Behavioural Therapy (Kangas & McDonald, 2011). Third-wave therapies and selected contemporary CBT techniques are increasingly being used with TBI clients. Examples of third wave therapy interventions piloted with TBI clients include CBT for brain injury, self-control

skills, mindfulness meditation, breathing exercises and guided visualization. Peer support has also been used to promote acceptance of TBI by encouraging participants to move beyond their limiting beliefs (Wilson et al., 2017).

A main distinction between traditional CBT and ACT is that CBT targets antecedent-focused emotion regulation or the evaluation of external or internal emotion cues, whereas ACT emphasizes response-focused emotion regulation (Wilson et al., 2017). Core components of ACT include psychological flexibility, mindfulness and value-guided or committed actions. The premise of ACT-based interventions is to facilitate functional change. This third wave of behavioural interventions may have particular efficacy in helping distressed TBI clients to re-engage in living a meaningful life in spite of their neurological and physical differences (Kangas & McDonald, 2011). Mindfulness exercises have been used to promote present-mindedness and ACT strategies were used in a self-management intervention for people with frontal lobe damage (Wilson et al., 2017). In the Making Sense of Brain Tumour programme (Ownsworth, 2015), mindfulness techniques were integrated with cognitive rehabilitation to support people in making sense of their illness, managing the effects on their functioning and finding meaning in their life situation by using value-guided actions (Wilson et al., 2017).

Critiques of Cognitive Behavioural Therapy with Traumatic Brain Injury

A growing number of studies have evaluated traditional CBT approaches for managing emotional disturbances in several types of TBI populations, including mild TBI and dementia, many of which displayed promising outcomes. While CBT can be effective not all research on CBT interventions has resulted in positive evidence for managing psychological distress in TBI samples (Kangas & McDonald, 2011). Despite the extensive literature empirically validating CBT, minimal studies have focused on the development of a specific CBT intervention for

improving mood and coping after TBI. In addition, no specified literature is dedicated to how CBT can assist with long term ER (Arundine, 2009). Relatively few studies have examined factors associated with positive responses to CBT in the TBI population. However, researchers have emphasized the potential influence of the therapeutic alliance, motivation and perceived self-efficacy in treatment outcomes following TBI (Ponsford et al., 2020).

The varying results across studies may partially be due to design and sampling inequities, including differences in TBI patient samples, inclusion/exclusion criteria, the inclusion of specific CBT components and variations in research hypotheses (Kangas & McDonald, 2011). The majority of studies are inundated by methodological limitations, including small sample sizes (typically, $N \leq 30$) and scarcity of longer-term follow-up assessments (beyond the 1–2 month post-intervention period) (Kangas & McDonald, 2011). Notably, only a minimal number of studies have utilized the gold standard of a RCT design with the majority of intervention trials using single-case reports or non-RCT group designs (Kangas & McDonald, 2011).

The lack of consistent benefit displayed for the use of CBT to TBI clients raises the question of whether traditional CBT is the best choice for this population. While many CBT strategies are well suited for adaptations to circumvent cognitive deficits, some core CBT strategies are cognitively demanding. An example of this is cognitive restructuring, which entails identifying, evaluating, challenging and replacing negative, dysfunctional thoughts with more adaptive and realistic thinking (Kangas & McDonald, 2011). Cognitive restructuring is abstract and likely to be challenging for clients with attention compromising cognitive impairments, working memory issues, reduced information processing speed or executive dysfunction. Multiple studies have cited evidence that individuals with TBI struggled to understand and implement the cognitive skills used in CBT, limiting the efficacy of the overall therapeutic

model (Kangas & McDonald, 2011). Perceptual and information processing discrepancies can make it difficult to recognize the relationships between an action and its consequences, thus weakening the process of associational learning (Wilson et al., 2017). This reduces the likelihood of generalizability across contexts. Further challenges to implementing CBT include neurocognitive impairment, deficits in self-awareness and the severity of challenging behaviours. These potential limitations reduce the extent cognitive schema and belief systems can be adapted and the emphasis is focused on the behaviour component of therapy rather than the cognitive portion (Wilson et al., 2017).

The high prevalence of comorbidity in the TBI population reinforces the transdiagnostic approach taken by CBT. However, a range of factors are associated with poor emotional outcomes including the significance of depression and anxiety symptoms, change expectancy, age and the time since injury (Ponsford et al., 2020). All of these are not consistently considered within traditional CBT models. Given the resource constraints of health care systems, it is important to acknowledge whether the effects of brief CBT interventions extend beyond a specific clinical outcome (Wilson et al., 2017). Clinical literature suggests the use of ER skills training as an adjunct to standard CBT is greater than CBT alone for treating depression and improving broader emotional wellbeing (Wilson et al., 2017). Taking into consideration that current CBT treatments do not explicitly focus on maladaptive emotion regulation strategies, it is possible that explicitly targeting emotional acceptance may result in greater benefit from the treatment, especially with regards to enhancing life satisfaction (Jazaieri et al., 2017). Considering the different CBT intervention formats and the emergence of computerised or online therapies, further research is required to determine the specific treatment targets required for

therapeutic effectiveness, optimal mode of delivery, program duration, intensity and how these may vary in accordance with unique client characteristics (Wilson et al., 2017).

Chapter Summary

The evolution of CBT has been, and continues to be, influenced by many fields of philosophy and science including phenomenology, personal construct theory, cognitive psychology and humanistic psychology. A common principle is the notion that we are active agents creating our own meaning and reality of the world (Wilson et al., 2017). The use of CBT interventions for psychological distress in people with TBI is derived from an evidence-based understanding of the presenting problems (Wilson et al., 2017). Growing evidence demonstrates that CBT interventions can improve psychological well being in people with TBI and propose that thought content and processes define the meaning and emotional impact of everyday experiences (Wilson et al., 2017). Encouraging research exists that indicates practitioners are starting to offer CBT to individuals with intellectual disabilities that are experiencing emotional issues (Taylor et al., 2008). Studies have evaluated interventions drawing on traditional CBT and third wave interventions with varying degrees of adaptation or integration with rehabilitation strategies. Successful CBT adaptations include booster sessions, visual and memory prompts, involving support people, concrete examples, psychoeducation with role play and experiential learning rather than focusing on language and reasoning (Wilson et al., 2017). Combining several of the above adaptations with the overall process of setting goals, assessing thoughts, planning and performing has been proven successful with exploration and change in subjective experience of self and reducing emotional distress with TBI clients. Specific CBT techniques, including third wave approaches, can be successfully integrated with TBI rehabilitation with

modifications for each individual (Wilson et al., 2017). The following chapter will explore DBT in detail regarding its applicability to individuals with TBI.

Chapter 3: Dialectical Behaviour Therapy and Application to Emotion Regulation

Dialectical Behaviour Therapy

DBT is a psychotherapy that balances therapeutic validation and acceptance of the individual while introducing behaviour and cognitive change strategies. It was originally developed by Marsha Linehan as an outpatient treatment for individuals diagnosed with Borderline Personality Disorder (BPD), a diagnosis that frequently involves suicidal or self-harming thoughts and behaviours (Lew et al., 2006). In Linehan's original controlled trial, DBT was shown effective in reducing self-injurious behaviour and inpatient psychiatric days with women diagnosed with BPD. DBT has since been adapted to treat BPD with several comorbidities and other psychological disorders where ER leads to psychopathology (Neacsiu et al., 2014). DBT identifies problem behaviours in terms of the biosocial theory with the central premise being that people with significant difficulties including self-destructive behaviours, lack of emotional control, depression, aggression, substance abuse and other impulsive actions often have problems with their ER system (Lew et al., 2006). Using the biosocial theory helps clients clarify confusing and maladaptive thoughts they have about themselves in relation to impulsivity and emotional dysregulation. An example of how this is used in DBT is a counsellor stating "You are a good person, but your brain is wired in a way that has difficulty with emotions. This is not your fault" (Lew et al., 2006). Emotional issues are viewed as a result of a person's biological makeup as well as the person's past experiences. From this perspective problem behaviours are considered maladaptive attempts to manage extreme emotions (Lew et al., 2006).

The standard DBT treatment focuses on providing general information about emotions and teaching different skills that improve managing emotions more effectively. Each session also includes mindfulness skills to aid in tolerating painful emotions and interpersonal effectiveness

skills to help participants develop healthier relationships (Afshari & Hasani, 2020). DBT also utilizes validation and tolerance of emotional experience and skill development for adaptive personal and interpersonal functioning dependent on the presenting problems or goals of intervention (Wilson et al., 2017). When emotions appear in the form of thoughts at the same time as physical sensations emotional responsiveness can be reduced if an individual learns to stay with physical sensations. Mindfulness helps individuals improve self-regulation through learning to tolerate their inner experiences before being subjected to stress inducing stimuli (Afshari & Hasani, 2020).

The five basic functions of a comprehensive DBT treatment program include enhancing behavioural capabilities, improving motivation to change, assuring the new skills generalize to the client's natural context, the treatment environment is structured in a way to support client and therapist skills and enhances counsellor capabilities and motivation to successfully help clients (Miller, 2005). The emphasis of the DBT model is on teaching clients to adjust extreme emotions, reducing negative behaviours resulting from those emotions and trust their own emotions, thoughts and behaviours. These goals are accomplished through multiple treatment modalities including individual therapy, skills training, coaching in crisis, structuring the environment and consultation teams for providers (Lew et al., 2006). The DBT model can be appropriately adapted for the cognitively challenged population and can provide clinical hope for complex clients who are often considered hopeless (Lew et al., 2006). The following will further explore the individual components of DBT.

Dialectics

Dialectics stresses that the fundamental nature of reality is change and process, not structure or content (Miller, 2005). The premise of dialect is the interrelatedness and wholeness

of our reality with the view that reality is comprised of opposing forces rather than being static (Miller, 2005). Clients often become stuck in polarities and DBT focuses on helping patients reach a synthesis between them. Considering this, the dialectical approach places minimal importance on analyzing individual parts unless they relate to part of the whole. Immediate and larger contexts of behaviour and the interrelatedness of behavioural patterns are the overall focus of dialectics (Miller, 2005).

Dialectical Behaviour Therapy: Individual therapy

In DBT the focus of individual therapy includes teaching and strengthening new skills to decrease problematic behaviours and addressing motivational or behavioural performance issues that interfere with the use of skillful responses (Lew et al., 2006 & Linehan, 2014). The individual therapy involves teaching and establishing new skills that decrease problematic behaviours and acknowledging motivational and behavioural issues that interfere with use of skillful emotional responses (Lew et al., 2006). Individual therapy sessions frequently use daily diary cards where problematic behaviours and emotions, as well as the use of adaptive skills, are recorded by the client. This is accompanied by a detailed behavioural chain analysis, which includes antecedents, vulnerability factors, links leading to problem behaviours and the behavioural consequences (Lew et al., 2006).

Skills Group Therapy

To begin solving problems more effectively clients learn new behavioural skills. In DBT, skills training consists of weekly groups for 2-2½ hours per week. Half of the group is devoted to presenting new skills. The remainder is spent reviewing homework practice for the skills currently being taught. The group is highly structured with an agenda set by the DBT manual developed by Marsha Linehan (Lew et al., 2006).

Coaching in Crisis

Clients are able to access counsellors by phone to help with applying skills at the specific time they need to use them. This on call aspect is an integral part of DBT treatment that helps individuals in applying the behavioural skills they are learning to problems in daily life as they occur in the moment (Lew et al., 2006).

Consultation Teams

Consultation teams provide ongoing training to improve the skill level of treatment providers, keeping them within the therapeutic frame and address problems that arise in the course of delivering treatment (Lew et al., 2006).

Dialectical Behaviour Therapy Skills

DBT includes a set of concrete skills derived from behavioural research and other evidence-based treatments aimed to address emotion dysregulation. DBT teaches clients to decrease emotion vulnerability factors by increasing happiness and resilience (“building a life worth living”). This is done through a set of skills that target biological homeostasis and influence emotional reactivity (Neacsiu et al., 2014). Empirical findings suggest that use of DBT skills promotes changes in depression, anger regulation and suicidal behaviour across BPD treatments. DBT targets five additional processes - managing emotion vulnerability factors, biological change, expression and action change and emotional processing (at the point of emotional aftereffects) (Neacsiu et al., 2014).

Mindfulness

Mindfulness skills are fundamental to DBT and are viewed as critical at every juncture in the ER process (Neacsiu et al., 2014). Mindfulness involves learning to control the focus of attention, observing a thought or emotion without placing judgement or attempting to change it

(Neacsiu et al., 2014). These include response-focused techniques such as diaphragmatic breathing and progressive muscle relaxation to divert attention away from negative emotional responses while increasing soothing thoughts or sensations before emotion initiation (O'Donohue & Fisher, 2012). DBT also introduces mindfulness skills that emphasize observing, describing and participating in the present moment. These skills teach individuals to observe thought appraisals as only thoughts that may not be accurately true. Mindfulness is not thought to necessarily reduce the frequency of distressing thoughts but to decrease the influence these thoughts have on behaviour and emotions (Neacsiu et al., 2014)

Decrease Emotion Vulnerability

DBT's PLEASE skills target treating **P**hysical **i**llness, balancing nutrition and **E**ating, staying off nonprescribed mood-**A**ltering drugs, getting sufficient but not excessive **S**leep and getting adequate **E**xercise. DBT also promotes resilience by teaching skills for accumulating positive life events and for building a sense of generalized mastery. Building mastery is achieved by engaging in activities that increase a sense of competence and self-efficacy (Neacsiu et al., 2014). Increasing the number of pleasurable events in one's life is another technique to increasing positive emotions. Coping ahead is an additional skill used that promotes contextual resiliency which entails individuals learning to use imaginal exposure and rehearsal to cope successfully with a difficult situation ahead of time (Neacsiu et al., 2014). Thus, this skill is likely to increase peoples' appraisal of their own ability to cope with an emotional event, effectively increasing a sense of mastery and self-efficacy (Neacsiu et al., 2014).

Modification Strategies

Two emotion regulation strategies that work via stimulus control are situation selection and modification. DBT teaches how to utilize evaluating pros and cons to guide a course of

action alongside a simple set of problem-solving skills aimed at eliminating, reducing or avoiding emotionally problematic situations (Neacsiu et al., 2014). Considering that many problems are interpersonal, DBT also includes a set of interpersonal effectiveness skills. These skills focus on how to obtain a wanted objective without hurting the interpersonal relationship or one's own self-respect (Neacsiu et al., 2014).

Cognitive Change Strategies

DBT focuses on analyzing and correcting situation appraisals by checking the facts. These skills focus on assumptions, interpretations, ruminative thoughts and worries from the actual observed facts of situations (Linehan, 2014; Neacsiu et al., 2014). With regards to emotions, DBT incorporates reality acceptance skills such as “turning the mind” toward acceptance, radical acceptance, and willingness over willfulness with a focus on radical acceptance of current emotions and willingness to experience even aversive emotions.

Biological–Experiential Change Strategies

In DBT an important part of the biological component of an emotion is the action tendency, or urge, to act in a specific manner. DBT provides a range of distress tolerance skills to inhibit acting on maladaptive urges that interfere with long term ER. These specific skills are designed to down-regulate the extreme physiological arousal that often accompanies intense emotions (Neacsiu et al., 2014). These skills are intended to impact high arousal quickly without requiring a high level of cognitive processing to complete. Grouped under the term TIP skills they target activation of the parasympathetic nervous system. These skills include temperature change with ice water to trigger the human dive reflex. The physiological response that follows involves both branches of the autonomic nervous system and reduces emotional arousal for a short period of time (Neacsiu et al., 2014). The opposite action in DBT applies components of

exposure-based treatment of emotions that can influence emotions by helping change the perception of the emotional event that is in the future. It is based on the idea that changing action tendencies are essential for reducing emotional disorders and deliberate actions opposite to those associated with unwanted emotions will effectively change emotions and action tendencies.

Behaviour that is the opposite of the automatic response or action urge of an emotion is intended to alter the meaning of the emotional event automatically and without conscious effort (Neacsiu et al., 2014).

Dialectical Behaviour Therapy in Comparison to Cognitive Behaviour Therapy

Beyond standard CBT, DBT includes mindfulness practice, dialectical strategies, case management supports, a suicide protocol and offers a coping skills group (Brown, Brown & Dibiasio, 2013). The modality blends acceptance strategies, change strategies and behavioural strategies. These include positive reinforcement, contingency management, treating self- invalidation and reinforced patterns of escalating emotions, which are considered underlying factors associated with challenging behaviours (Brown et al., 2013). DBT promotes ER, mindfulness, distress tolerance and interpersonal relationships as well as the importance of the evolutionary adaptive value of emotions (Afshari & Hasani, 2020). The intention of DBT is to teach clients how to actively regulate emotional responses. It considers emotions to be complex, brief, involuntary, patterned, full-system responses to internal and external stimuli (Neacsiu et al., 2014). Although emotional responses are viewed as systemic, DBT counsellors present them to clients as comprising of six transacting subsystems that are practical in both understanding and learning to regulate emotions. These subsystems are emotion vulnerability factors, internal and external events that serve as emotional cues, interpretations of cues, emotional response tendencies, nonverbal or verbal expressive responses and actions and aftereffects of the initial

emotion (Neacsiu et al., 2014). Emotion regulation techniques, whether used as a separate treatment or as part of DBT, have beneficial effects when used in conjunction with other strategies, such as mindfulness and interpersonal techniques, to see more effects on mental health concerns (Afshari & Hasani, 2020).

A randomized controlled trial by Afshari and Hasani (2020) comparing individual DBT to CBT sessions in individuals with a diagnosis of generalized anxiety disorder identified an improvement when mindfulness strategies were used for clients in DBT and CBT conditions. All subscales improved more after intervention in the DBT than the CBT group. This was hypothesized as a result of mindfulness techniques teaching individuals to improve thoughts and behaviours while concurrently increasing awareness of their emotions, thus improving the level of ability to control emotions in real life situations (Afshari & Hasani, 2020). Findings also suggested that CBT reduced symptoms of depression and anxiety better than DBT, however DBT was more effective in improving emotion regulation and mindfulness than CBT (Afshari & Hasani, 2020).

Existing Research on Emotion Regulation Interventions

Data for the efficacy of DBT is extensive, including 43 clinical trials conducted across 21 independent research teams (Neacsiu et al., 2014). In clinical studies, DBT has proven to be effective in reducing drug dependence and opioid use, improving depression scores and adaptive coping skills among the depressed elderly, increased the likelihood of completion of treatment and reduction of hospitalizations among suicidal teens, improving mood and adaptive coping skills among male forensic inpatients, decreasing behavioural problems among juvenile female offenders and reduction in binge episodes and days of binging among women with Binge Eating Disorder (Lew et al., 2006). The multitude of problems related to reduced capacity for ER in

brain injuries highlights the importance of developing interventions to improve ER skills (Neumann et al., 2017). There are limited reports in the literature of such interventions, however emerging data indicates that the skills training component of DBT is a successful stand-alone intervention for emotion dysregulation in a variety of clinical samples (Neacsiu et al., 2014).

Due to the difficulties involved in conducting research with the TBI population most studies have significant methodological limitations, including nonrandomized designs and inadequate assessment of outcomes (Brown et al., 2013). Few emotion regulation treatment studies in the TBI population have incorporated some emotional self-awareness training, however one study by Neumann et al. (2017) examined proof of concept for a treatment that focused primarily on improving components of alexithymia (emotional awareness, labelling and interoceptive awareness) with TBI participants. The participants' emotional self-awareness, in addition to their ability to describe and differentiate emotions, was significantly improved 2 months following treatment, which suggests the benefits were maintained over time. Another goal of this study was to examine changes in emotion dysregulation post-treatment. Despite no explicit training to regulate unpleasant emotions as part of the intervention, initial improvements were found for anxiety, positive affect and overall emotion dysregulation (Neumann et al., 2017).

There are several theoretical assumptions regarding the association of alexithymia with emotion dysregulation. One assumption is that emotional awareness is needed to consciously regulate emotions (Neumann et al., 2017). Also reduced awareness and difficulty describing emotions have been associated with avoidant coping skills. If one avoids a problem that causes emotional distress, that problem is likely to remain unresolved and may compound and arise through behaviours (Neumann et al., 2017). Neuroimaging research suggests that the cognitive

process of labelling emotions helps down regulate the emotional limbic reaction. Therefore, people who have trouble describing their emotions may have difficulty regulating unpleasant feelings. In one case study of a client who had alexithymia after a stroke was taught an emotional vocabulary concurrently with video and heart rate biofeedback to enhance the client's awareness of his own emotional responses. This patient showed substantial reductions in alexithymia, suggesting that alexithymia may be minimized after brain damage with such targeted treatment (Neumann et al., 2017). Naming and acknowledging emotions is a central component of DBT (Linehan, 2014).

Biosocial Theory and Emotion Dysregulation

In accordance with the biosocial theory, an individual's emotional dysregulation is an outcome of the biological vulnerabilities in combination with exposure to an invalidating environment (Brown et al., 2013). This theory is especially applicable to people with intellectual disabilities. Beyond cognitive limitations, some individuals have additional problems such as comorbid psychiatric disorders, deficits in adaptive coping skills and maladaptive behaviours (Brown et al., 2013). The invalidating environment construct was developed by Linehan to describe the often-experienced acculturation of an individual with BPD and is also a useful description for many individuals who grow up with ID. Each of Linehan's conceptualizations reflects a comparable experience by individuals with ID (Lew et al., 2006). Emotion dysregulation appears to be a critical influential factor in challenging behaviours; it is vital intervention for problem behaviours involve self-regulation capacities (Brown et al., 2013).

Dialectical Behaviour Therapy and Suicidality

In other clinical populations, trials of psychological therapies such as DBT have shown promise for reducing morbidity associated with suicidal behaviour (Simpson et al., 2011). No

present research exists on the influences of DBT on TBI client suicidality, however DBT directly addresses suicidal behaviour and other self-directed violence. It prioritizes suicidal behaviour and other self-directed violence as the primary treatment targets and has been shown to reduce self-directed violence in clinical trials (DeCou et al., 2019). DBT theorizes that the underlying problem to treat is pervasive emotion dysregulation that then leads to impulsive and maladaptive behaviours. These include self-directed violence or other behaviours that are interpersonally destructive, as well as the inability to be dialectical and flexible in responding to life events (DeCou et al., 2019). An important element of any prevention interventions is reducing risk by improving suicidal distress and developing coping mechanisms (Simpson et al., 2011). DBT may not be particularly effective for the reduction of suicidal ideation, however it has demonstrated effectiveness for the treatment of self-directed violence and in reducing the frequency of accessing psychiatric crisis intervention services (DeCou et al., 2019).

Dialectical Behaviour Therapy and Intellectual Disabilities

Interest has recently grown around DBT as a potential therapeutic avenue for people with an ID who experience limited impulse control or difficulty with ER (Crossland et al., 2017).

There is literature suggesting that DBT may be an effective treatment for individuals with ID, including forensic offenders, individuals with additional challenging behaviours across a range of settings including the community and high secure environments (Crossland et al., 2017).

Co-morbid conditions associated with ID influence whether an individual is predisposed to psychiatric disturbances and how others in their lives interact with them. For example, a history of early protective limitations may influence whether someone learns the skills to negotiate the world independently and navigate their anxiety regarding learning new things (Lew et al., 2006). Individuals with ID that have personality disorder traits are a particularly

challenging population. Their treatment is often complicated by helplessness, confusion and hostility held by providers responsible for their care. Frequently, individuals are thought to be extremely treatment-resistant, resulting in team discord and burnout among providers (Lew et al., 2006). Providing necessary support and safety to ID individuals and the community can be a challenging and expensive task that requires high levels of supervision, staff injuries, staff turnover and the utilization of mental health and corrections resources (Brown et al., 2013).

Research suggests that individuals with ID are over-represented in those diagnosed with psychiatric disorders (Lew et al., 2006). Individuals with ID and varying concurrent diagnoses are in need of an effective treatment model. DBT presents itself as an approach that is appropriate to use with the ID population due to it being a skills-based model that is coherent with psycho-educational and habilitative practice by using non-pejorative language without victim blaming. Additionally, DBT has a strong focus on teaching individuals to advocate for themselves within the system of providers, specifically promoting values of assertiveness, independence, empowerment and self-advocacy (Lew et al., 2006). DBT's self-monitoring procedures have been deemed effective with clients who have difficulty reading and writing when working with their counsellors to create summary forms completed by support staff, documenting adaptive and problematic target behaviours to facilitate behaviour analysis. Adapted diary cards that are individualized, simplified and use pictures to represent targets and skills are effectively integrated when possible (Brown et al., 2013). Formal behavioural treatment plans are used with this population which often include the use of tangible rewards for adaptive behaviours and systematic contingency plans to address problematic behaviours (Brown et al., 2013).

Dialectical Behaviour Therapy Skills System for Cognitive Challenges

Standard DBT skills were not developed for individuals living with cognitive impairments. This is specifically due to the use of multisyllabic terms, complex mnemonics and abstract language. For those with learning differences, a simple modification would not be sufficient to capture the essence of DBT in such a way that promotes generalization of the core concepts (Brown, 2015). An individual with a brain injury may have trouble focusing attention, remembering information and utilizing concepts when in complex situations. The Emotion Regulation Skills System (DBT-SS) for cognitively challenged clients is constructed to maximize learning, integration and generalization of DBT skills into life contexts. These skills can be used by clients who cannot read or write and those with varying cognitive challenges (Brown, 2015). As with standard DBT, an individual with severe learning challenges needs to be able to be in the present moment, however they must also develop skills to be in the present second in order to navigate the entire process of the emotion (Brown, 2015).

Brown et al. (2013) used DBT-SS, a manual for ER skills that identifies modified versions of the DBT skills modules for people with ID and found a statically significant reduction in all recorded categories of challenging behaviour (Crossland et al., 2017). ER skills, DBT and cognitive load theory are integrated as the basis of DBT-SS (Brown, 2015). DBT-SS offers supports for all stages of an emotion, so generalizability is more possible. DBT-SS is constructed to develop mindfulness, interpersonal effectiveness, ER and distress tolerance capacities, similarly to standard DBT skills modules. However, the modified curriculum significantly adapts language and format to accommodate the particular learning and processing needs of cognitively challenged individuals (Brown et al., 2013). Considering the complex needs of individuals who have intellectual and developmental disabilities and/or challenging

behaviours, combined with the absence of well-defined data indicating an effective treatment for this population, the adaptation of DBT for people with cognitive challenges is necessitated (Brown et al., 2013).

The DBT-SS skills teach mindfulness, ER, distress tolerance and interpersonal effectiveness in skills groups and discuss implementation of these strategies in real-life settings during individual therapy (Brown, 2015). The DBT mindfulness skills of “observe”, “describe” and “participate” have been taken from the principle-driven model and transformed into tangible steps that are integrated into every skills chain (Brown, 2015). DBT-SS clearly defines techniques to manage risky situations in effective ways, which is a vital component with those living with cognitive challenges given the high rate of behavioural dyscontrol in this particular population (Brown, 2015). DBT-SS is a 12-week cycle curriculum, minimum of one-year cycles through the material four times. Group teaching strategies continually expose client to Skills List and the System Tools within the context of their lives. This revolving approach allows the individual to gain comprehension over time (Brown, 2015). Participation in DBT-SS generally lasts several years. (Brown, 2015).

The skills list of DBT-SS

Getting started with clear picture

This skill guides the individual through steps that bring focused attention to six aspects of their present experience. 1. Prompt client to focus on breath. 2. Shift attention to what is happening around them. 3. Once client is aware of environment, shift to a body check; bringing attention to the body/ internal experience. 4. Client then labels and rates their emotions 5. Notice Thoughts 6. Notice Urges (Brown, 2015).

Using “On-Track Thinking”

Using the metaphor of a train moving towards a destination or goal, On-Track thinking uses four tasks to complete an effective thinking process. 1. Stop and check it 2. Turn it up, which is reappraisal prompting the generation of on-track thoughts. 3. Cheerleading thoughts such as “I can do this”. 4. Make a skills plan by going through concrete steps (Brown, 2015).

Taking On-Track Action

Mobilizing new adaptive actions that are directly related to personal goals (Wise Mind in traditional DBT). These skills include, switching tracks from off-track to on-track, making an on-track action plan, accept the situation and turn the page which involves turning mind away from a situation that exacerbates emotions toward one that is in service of new on-track goals (Brown, 2015).

Managing Risky Situations with Safety Plans

Through thinking, talking or writing a client evaluates the level of risk and in choosing appropriate responses to manage the circumstances (Brown, 2015).

Doing New-Me Activities

Activities throughout each day that set the person on-track with personal goals. These activities serve four basic functions: focus attention, promote distraction, help person feel good and others are intended to be fun (Brown, 2015).

Problem Solving

Helping a client strategically evaluate when and how to solve problems so they reach their desired goal (Brown, 2015).

Expressing Myself

This involves the client communicating what is on their mind or in their heart. They learn to use the previous skills, such as New-Me Activities, to reduce emotions when experiencing discomfort or impulsivity (Brown, 2015).

Getting It Right

Provides a simple framework to get what they want from another person. They learn to be in the right mind, talk to the right person at the right time, using the right tone and saying the right words. The right words include SEALS, using Sugar (polite), Explaining the situation, Asking for what you want, Listening and Seal a deal (Brown, 2015).

Relationship Care

This skill assists the person in managing their self-relationship and interactions with other people. This involves building on-track relationships, balancing on-track relationships and changing off-track relationships (Brown, 2015).

Dialectical Behaviour Therapy and Traumatic Brain Injury

The majority of TBI studies focus on aspects of cognitive change following TBI rather than the assessment of emotional change post-TBI (Henry et al., 2006). Despite the consequences and psychological symptoms, the availability of psychological care for people with TBI remains limited (Arundine et al., 2012). Dr. Marsha Linehan developed DBT to treat a population that was categorized as difficult to treat by the majority of mental health workers, specifically suicidal and parasuicidal clients suffering from BPD (Miller, 2005). No specific research has been conducted to assess the efficacy of DBT with TBI clients. However, DBT is one of the most recognized treatments related to emotion regulation, focusing on mindfulness, distress tolerance and interpersonal relationships (Afshari & Hasani, 2020). With the recent

expanded use of DBT with populations that have concurrent diagnoses in a wide range of settings, DBT appears promising for TBI clients (Lew et al., 2006).

TBI has many presenting obstacles which make DBT-SS preferable for individuals living with cognitive challenges (Brown et al., 2013). Studies of DBT-SS produced large statistically and clinically significant improvements of less severe behaviours occurring in the first year and improvement of severe behaviours improving more gradually across the first 4 years. Statistical analyses estimated a 76% reduction in serious behaviours, for example fewer violent, self-injurious and illegal behaviours across 4 years of DBT-SS (Brown et al., 2013). Research suggests that a DBT-SS training group shows promise for reducing distress and increases functioning in addition to well-being for those with ID (Crossland et al., 2017). DBT-SS may be more helpful for younger participants and participants with BPD, self-injury or aggression, as the presence of these characteristics was associated with larger reductions in severe challenging behaviours (Brown et al., 2013). Of the 27 clients that had complete data in this study the average client spent 228 fewer days per year in institutional settings during DBT-SS (Brown et al., 2013).

Chapter 3 Summary

Early stages of TBI recovery traditionally focuses on cognitive and physical symptoms, whereas later stages are often dominated with emotional symptoms, remoteness, financial deficits, safety restrictions and mobility issues, all of which impede access to psychological treatment (Arundine et al., 2012). Despite these individuals requiring support and rehabilitation interventions research and supports remain limited. Thus far, no research has been done on the effectiveness of DBT to treat emotion dysregulation in TBI clients, however due to DBT being a psychotherapy based on regulating emotions it may be a promising intervention in this

population. Working with individuals living with psychiatric and neurocognitive symptomatology concurrent with TBI presents unique challenges, such as the progress in therapy being significantly hindered by cognitive deficits (Gómez-de-Regil et al., 2019). During the acute recovery phase after TBI, people with brain injury often overestimate their abilities across a range of domains. Awareness of physical impairments tend to develop earlier and to a greater extent than awareness of cognitive, behavioural and emotional difficulties (Wilson et al., 2017).

DBT is a comprehensive treatment that integrates elements of CBT, mindfulness practice, dialectical strategies, case management supports, a suicide protocol and offers a coping skills group (Ritschel et al., 2015). Although DBT historically has been linked with BPD, two factors have led to the broader application of DBT to other clinical populations. First, individuals with BPD tend to meet criteria for at least one additional diagnosis and, on average, a person diagnosed with BPD meets criteria for approximately four additional disorders. Therefore, the treatment was designed to target myriad presenting problems across a range of problems (Ritschel et al., 2015). ER skills are a basic principle in beginning and maintaining adaptive behaviours, as well as preventing negative behaviours and emotions (Afshari & Hasani, 2020). The empirical evidence for DBT demonstrates that the treatment is effective not only for reducing the major treatment targets of suicide and NSSI, but also associated psychological difficulties, such as depression, and in recent years DBT has become more strongly associated with pervasive emotion dysregulation rather than with BPD specifically (Ritschel et al., 2015). For TBI individuals, often with comorbid diagnostic presentations or difficulties driven by a primary difficulty regulating emotions combined with the repetitive use of ineffective coping strategies, adapted versions of DBT may be just what is needed (Ritschel et al., 2015).

The standard DBT skills modules are designed for average-intelligence learners, whereas DBT-SS is a simplified DBT-based coping skills curriculum that extracts key DBT skills concepts, simplifies the language and provides tools that guide clients in choosing the most effective skills to manage their current situation based on their level of emotional arousal. Additionally, DBT-SS providers promote skills generalization by frequently consulting with the multidisciplinary teams (Brown et al., 2013). DBT-SS is a modified emotion regulation skills curriculum designed for individuals with cognitive challenges such as ID. DBT-SS is designed to build mindfulness, interpersonal effectiveness, emotional regulation and distress tolerance capacities, as in standard DBT skills modules. However, the adapted curriculum significantly modifies language and format to accommodate the specific learning and processing needs of the population. Offering DBT-SS is suggested to enable effective transitions to increasing levels of independence within residential and vocational settings (Brown et al., 2013).

Chapter 4: Recommendations

Brain injury is the leading cause of disability in individuals under the age of 45 and every day 452 people suffer a TBI in Canada or approximately one person injured with a TBI every 3 minutes (NBIA, 2021). One study indicated that more than half of Toronto's homeless population had an acquired brain injury with 70 percent of participants indicating that their first acquired brain injury occurred before becoming homeless (NBIA, 2021; The Government of Canada, 2020). These research indications highlight the necessity of having effective accessible counselling services for clients that have TBI's. Psychology has a long history of research and practice of the neuropsychological assessment of TBI clients and there is a growing interest in designing, testing and providing suitable psychological interventions (Gómez-de-Regil et al., 2019). Work has been done in recent years across governments, stakeholders and health care professionals to improve education and awareness of TBI, particularly concussions (The Government of Canada, 2020). However, there remains considerable absences of therapeutic interventions accessible for TBI clients.

CBT is the preferred therapeutic approach for treating behavioural and emotional disturbances in various populations and an adapted version has generated evidence of being an effective intervention with TBI clients (Ponsford et al., 2016). Holistic therapeutic programs have demonstrated efficacy in improving functional outcomes after brain injury. However, the effects of psychological treatment with additional rehabilitation therapies prevent us from drawing any firm conclusions regarding the effectiveness of the psychotherapeutic or CBT-based component of their programs (Arundine et al., 2012). Neither CBT or DBT are likely to be effective as brief therapies and require modifications including the use or repetition, prompts and reminders. Components of CBT such as behavioural activation and cognitive restructuring can

help to enhance mood and emotion regulation by promoting more adaptive thinking and re-engagement in a variety of activities (Arundine et al., 2012). Research findings have supported the longer-term benefits of an 11-week CBT program on the psychological well-being of clients who have TBI's and showed improvements in community integration 6 months after the cessation of treatment. The findings are encouraging in suggesting that intervention is helpful even when provided a decade after initial injury can have lasting effects (Arundine et al., 2012).

Emotions often trigger quickly for individuals with ID or other cognitive challenges, including TBI. These individuals frequently lack the metacognitive awareness and mastery of adaptive coping strategies, all of which contribute to the challenges faced while transitioning effectively through the phases of an emotion (Brown, 2015). In order to solve problems more effectively, individuals with TBI must learn new behavioural skills concurrently with emotion regulation strategies (Lew et al., 2006). The TBI population, or anyone with varying cognitive challenges, face multiple vulnerability factors that create a need for the implementation of the DBT model, while the same vulnerabilities have historically hindered their accessibility to the DBT model (Brown, 2015). With the increasing implementations of DBT it is pertinent to assess how this modality may be useful in patients diagnosed with TBI. The prevalence of emotional dysregulation, including symptoms of BPD, among clients living with TBI suggests that DBT would be an effective strategy for this population as it can be adapted to treat the same personality traits afflicting patients with TBI as those with BPD (Miller, 2005). Although this research area is in its infancy and more findings are needed, the evidence suggests that DBT skills are a promising intervention for emotion dysregulation across psychopathology (Neacsu et al., 2014). DBT and more specifically, DBT-SS hold promise, as they have been shown to

effectively reduce challenging behaviours in other emotionally dysregulated populations (Brown et al., 2013).

DBT blends acceptance and change strategies to simultaneously treat self-invalidation and reinforced patterns of escalating emotions that are considered to be underlying influences associated with challenging behaviours (Brown, 2015). DBT promotes teaching individuals to solve their own problems and skillfully navigate their own environment, thus increasing their overall independence which is a prominent goal among those with TBI. This occurs by promoting clients to implement skills for themselves, while also having access to providers teaching and guiding them on ways to solve their own problems (Lew et al., 2006). Considering the flexible integration of acceptance and change based strategies, DBT is an ideal treatment to be modified for transdiagnostic applications and can be generalized to various treatment groups and settings with research indicating that it can also be used successfully provided by clinicians with varying backgrounds (Miller, 2005; Ritschel et al., 2015).

A philosophy of DBT worth implementing is to build a life worth living, an optimum goal for improved quality of life of those with TBI attempting to increase ER and reduce emotional symptoms and impairments of tolerance, distress and frustration. DBT skills are integral for the success and implementation of emotion regulation skills, specifically with those who have TBI should involve a group skills group. Individuals should have access to participating multiple times if they desire, as with DBT-SS it will often take more than one cycle to learn or re-learn ER skills. Skills groups provide validating of client experiences in addition to providing the opportunity for exploration and understanding of why behaviours occur using the DBT model. Services providing psychological interventions to individuals with TBI should identify helpful mainstream interventions and adapt them according to the individual's specific

needs. There is a growing body of evidence that an adapted DBT skills training group is an effective approach to working with ID clients in assisting with not only ER but also, developing coping skills and improving psychological functioning, which appear transferrable to TBI clients (Crossland et al., 2017). Considering the success of DBT-SS which is a simplified DBT-based coping skills curriculum that extracts key DBT skills concepts, simplifies the language and provides tools to guide clients through choosing the most effective skills to manage their current situation based on the level of emotional arousal. DBT-SS providers can be used by providers to promote skills generalization and frequently consult with multidisciplinary teams to better continuity of client care (Brown et al., 2013). In addition to in-session use of behavioural strategies typical in standard DBT formal behavioural treatment plans can be used which include the use of tangible rewards for adaptive behaviours and systematic contingency plans to address problematic behaviours (Brown et al., 2013).

Considering the similarities of symptomatology with ID and TBI's the implementation of the DBT emotion regulation skills curriculum adapted for individuals with cognitive impairment appears to be an effective strategy when working with this population. DBT includes mindfulness practice, dialectical strategies, case management supports, suicide protocol, coping skills group, individual therapy sessions and ongoing coaching (Brown, 2013). An idealized version of the skills group for clients with TBI would run for 12 weeks, such as DBT-SS and include email access to providers when needed in between sessions, homework that incorporates skills into daily life (generalization), application and practice of skills within the group and email reminders or prompts between sessions. Delivery of therapeutic intervention can include telephone or video platforms which will potentially increase accessibility and reduce costs of psychotherapy for this vulnerable population (Arundine et al., 2012). The structure of the group

should include check in, mindfulness skills, homework review, core content of emotion regulation, distress tolerance and interpersonal effectiveness skills, followed by a check out regarding emotion identifying and upcoming homework. The homework component should include implementation of the learned skill into everyday life situations at some point throughout the week. Providing hard copies of materials is ideal with this population as they can be used as ongoing tangible references and memory prompts during and after the 12- weeks of group sessions.

An adapted version of DBT for individuals with TBI should include treatment that blends acceptance strategies (validation) and change strategies (behavioural strategies such as positive reinforcement and contingency management) to identify emotions and utilize skills that improve self-invalidation and reinforced patterns of escalating emotions, which are underlying factors associated with challenging behaviours (Brown, 2013). In line with previous research with people with ID, more robust methodology is needed to provide higher quality evidence to support such interventions in TBI clients (Crossland et al., 2017). Taking into consideration the complex needs of individuals who have cognitive challenges and challenging behaviours, combined with the absence of clear data indicating an effective treatment for this population, the adaptation of DBT for people with TBI appears warranted and future research is needed regarding the implementation of DBT or DBT-SS with TBI clients.

References

- Aboulafia-Brakha, T., Allain, P., & Ptak, R. (2016). Emotion regulation after traumatic brain injury: distinct patterns of sympathetic activity during anger expression and recognition. *Journal of head trauma rehabilitation, 31*(3), 21-31.
- Afshari, B., & Hasani, J. (2020). Study of dialectical behavior therapy versus cognitive behavior therapy on emotion regulation and mindfulness in patients with generalized anxiety disorder. *Journal of Contemporary Psychotherapy, 50*(4), 305-312.
- American Association on Intellectual and Developmental Disabilities (AAIDD). (2010). Definition of Intellectual Disability.
- American Psychiatric Association (APA). (2013). Diagnostic and statistical manual of mental disorders (5th ed.).
- Arundine, A. (2009). Cognitive behaviour therapy after acquired brain injury: An investigation of the benefits for emotional well-being, coping strategy use, and community integration at 6-months post-treatment. 1-128.
- Arundine, A., Bradbury, C. L., Dupuis, K., Dawson, D. R., Ruttan, L. A., & Green, R. E. (2012). Cognitive behavior therapy after acquired brain injury: maintenance of therapeutic benefits at 6 months posttreatment. *The Journal of head trauma rehabilitation, 27*(2), 104-112.
- Bradbury, C. L., Christensen, B. K., Lau, M. A., Ruttan, L. A., Arundine, A. L., & Green, R. E. (2008). The efficacy of cognitive behavior therapy in the treatment of emotional distress after acquired brain injury. *Archives of Physical Medicine and Rehabilitation, 89*(12), S61-S68.

- Brown, J. F. (2015). *The Emotion Regulation Skills System for Cognitively Challenged Clients: A DBT?-Informed Approach*. Guilford Publications.
- Brown, J. F., Brown, M. Z., & Dibiasio, P. (2013). Treating individuals with intellectual disabilities and challenging behaviors with adapted dialectical behavior therapy. *Journal of mental health research in intellectual disabilities*, 6(4), 280-303.
- Bryant, R.A., Moulds, M.M., Guthrie, R. and Nixon, R.D.V. (2003). Treating acute stress disorder following mild traumatic brain injury. *American Journal of Psychiatry*, 160, 585–587.
- Crossland, T., Hewitt, O., & Walden, S. (2017). Outcomes and experiences of an adapted dialectic behaviour therapy skills training group for people with intellectual disabilities. *British Journal of Learning Disabilities*, 45(3), 208-216.
- DeCou, C. R., Comtois, K. A., & Landes, S. J. (2019). Dialectical behavior therapy is effective for the treatment of suicidal behavior: A meta-analysis. *Behavior therapy*, 50(1), 60-72.
- Fenn, K., & Byrne, M. (2013). The key principles of cognitive behavioural therapy. *InnovAiT*, 6(9), 579-585.
- Gagnon, J., Bouchard, M. A., Rainville, C., Lecours, S., & St-Amand, J. (2006). Inhibition and object relations in borderline personality traits after traumatic brain injury. *Brain Injury*, 20(1), 67-81.
- Gallagher, M., McLeod, H. J., & McMillan, T. M. (2019). A systematic review of recommended modifications of CBT for people with cognitive impairments following brain injury. *Neuropsychological Rehabilitation*, 29(1), 1-21.
- Gómez-de-Regil, L., Estrella-Castillo, D. F., & Vega-Cauich, J. (2019). Psychological Intervention in Traumatic Brain Injury Patients. *Behavioural neurology*.

- Henry, J. D., Phillips, L. H., Crawford, J. R., Theodorou, G., & Summers, F. (2006). Cognitive and psychosocial correlates of alexithymia following traumatic brain injury. *Neuropsychologia*, *44*(1), 62-72.
- Hodgson, J., McDonald, S., Tate, R. and Gertler, P. (2005). A randomised controlled trial of a cognitive-behavioural therapy program for managing social anxiety after acquired brain injury. *Brain Impairment*, *6*, 169–180.
- Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive therapy and research*, *36*(5), 427-440.
- Jazaieri, H., Goldin, P. R., & Gross, J. J. (2017). Treating social anxiety disorder with CBT: Impact on emotion regulation and satisfaction with life. *Cognitive Therapy and Research*, *41*(3), 406-416.
- Kangas, M., & McDonald, S. (2011). Is it time to act? The potential of acceptance and commitment therapy for psychological problems following acquired brain injury. *Neuropsychological rehabilitation*, *21*(2), 250-276.
- Kim, S., Zemon, V., Lehrer, P., McCraty, R., Cavallo, MM., Raghavan, P., Ginsberg, JJ., Foley, FW. (2019). Emotion regulation after acquired brain injury: a study of heart rate variability, attentional control, and psychophysiology. *Brain Inj.* 2019;33(8):1012-1020. doi: 10.1080/02699052.2019.1593506. PMID: 30907142.
- Klumpp, H., Fitzgerald, D. A., Angstadt, M., Post, D., & Phan, K. L. (2014). Neural response during attentional control and emotion processing predicts improvement after cognitive behavioral therapy in generalized social anxiety disorder. *Psychological medicine*, *44*(14), 3109-3121.

- Neacsiu, A. D., Bohus, M., & Linehan, M. M. (2014). Dialectical behavior therapy: An intervention for emotion dysregulation.
- Lew, M., Matta, C., Tripp-Tebo, C., & Watts, D. (2006). Dialectical behavior therapy (DBT) for individuals with intellectual disabilities: A program description. *Mental Health Aspects of Developmental Disabilities, 9*(1), 1.
- Linehan, M. (2014). *DBT. Skills training manual*. Guilford Public
- Maulik, P. K., Mascarenhas, M. N., Mathers, C. D., Dua, T., & Saxena, S. (2011). Prevalence of intellectual disability: a meta-analysis of population-based studies. *Research in developmental disabilities, 32*(2), 419-436.
- Medd, J. & Tate, R. (2000). Evaluation of an anger management therapy programme following acquired brain injury: a preliminary study. *Neuropsychological Rehabilitation, 10*, 185–201.
- Miller, A. (2005). *Dialectical behavior therapy for Mild Traumatic Brain Injury: A program design*. Carlos Albizu University.
- National Brain Injury Association (NBIA). (2021). Retrieved July 20, 2021 from: <https://www.nbia.ca/brain-injury-statistics/#:~:text=One%20in%20three%20Canadians%20is,serious%20brain%20injury%20every%20year.>
- Neumann, D., Malec, J. F., & Hammond, F. M. (2017). Reductions in alexithymia and emotion dysregulation after training emotional self-awareness following traumatic brain injury: A phase I trial. *The Journal of head trauma rehabilitation, 32*(5), 286.
- O'Donohue, W. T., & Fisher, J. E. (Eds.). (2012). *Cognitive behavior therapy: Core principles for practice*. John Wiley & Sons.

- Owensworth, T. (2005). The impact of defensive denial upon adjustment following traumatic brain injury. *Neuropsychanalysis*, 7, 83–94.
- Ponsford, J., Lee, N. K., Wong, D., McKay, A., Haines, K., Alway, Y., ... & O'Donnell, M. L. (2016). Efficacy of motivational interviewing and cognitive behavioral therapy for anxiety and depression symptoms following traumatic brain injury. *Psychological medicine*, 46(5), 1079-1090.
- Ponsford, J., Lee, N. K., Wong, D., McKay, A., Haines, K., Downing, M., ... & O'Donnell, M. L. (2020). Factors associated with response to adapted cognitive behavioral therapy for anxiety and depression following traumatic brain injury. *The Journal of head trauma rehabilitation*, 35(2), 117-126.
- Ritschel, L. A., Lim, N. E., & Stewart, L. M. (2015). Transdiagnostic applications of DBT for adolescents and adults. *American journal of psychotherapy*, 69(2), 111-128.
- Simpson, G.K., Tate, R.L., Whiting, D L. and Cotter, R.E. (2011). Suicide prevention after traumatic brain injury: a randomized controlled trial of a program for the psychological treatment of hopelessness. *Journal of Head Trauma Rehabilitation*, 26, 290–300.
- Taylor, J. L., Lindsay, W. R., & Willner, P. (2008). CBT for people with intellectual disabilities: emerging evidence, cognitive ability and IQ effects. *Behavioural and Cognitive Psychotherapy*, 36(6), 723-733.
- The Government of Canada (2020). Injury in review, 2020 edition: Spotlight on traumatic brain injuries across the life course.
- van der Horn, H. J., Liemburg, E. J., Aleman, A., Spikman, J. M., & van der Naalt, J. (2016). Brain networks subserving emotion regulation and adaptation after mild traumatic brain injury. *Journal of neurotrauma*, 33(1), 1-9.

van Kessel, K., Moss-Morris, R., Willoughby, E., Chalder, T., Johnson, M.H. and Robinson, E.A. (2008). Randomized controlled trial of cognitive behavior therapy for multiple sclerosis fatigue. *Psychosomatic Medicine*, 70, 205–213.

Wadhawan, Abhishek, John W. Stiller, Eileen Potocki, Olaoluwa Okusaga, Aline Dagdag, Christopher A. Lowry, Michael E. Benros, and Teodor T. Postolache. (2019). Traumatic brain injury and suicidal behavior: a review. *Journal of Alzheimer's disease*, 68(4), 1339-1370.

Wilson, B. A., Winegardner, J., van Heugten, C. M., & Ownsworth, T. (Eds.). (2017). *Neuropsychological rehabilitation: The international handbook*. Psychology Press.